MARCH, 1955

PRODUCTS finishing

Finishing Aluminum Evaporators . Page 26
Etch Primers for Painting Metal . Page 42
Applying Drawing Compound . . . Page 58
Sulfamate Nickel Plating . . . . . Page 66
Finishing Clinic . . . . . Page 88
What's New? . . . . . Page 94
(Table of Contents . . . . . Page 5)

Finishes on *Metal* Products

34¢ per part may be economical!

12/3¢ per part may be too much!

what does your metal cleaning cost?

You may be looking at cleaning department costs and saying: "that looks about right . . . it used to cost us a lot more!" Would you like to know, for sure, that your cleaning costs are just as low as they can be . . . with excellent results?

Many present day users of Cincinnati Cleaning machinery thought their former methods were modern . . . their costs low . . . their production high – until a Cincinnati cleaning unit proved savings of 60, 66, 75 and 81 percent in time and labor . . . along with production increases up to 200 percent!

The Cincinnati Cleaning service that led to these savings is available to you . . . without cost or obligation! Use the handy coupon for complete details.

Cincinnati CLEANING & FINISHING MACHINERY CO.
2008 HAGEMAN STREET, SHARONVILLE, OHIO

☐ Have a Cincinnati engineer point out time and labor savings and production increases in our cleaning.

☐ Send literature on Cincinnati cleaning equipment.

company.....

address.....

city.....state.....

name.....

Please send additional information on the products shown on the following pages of this issue. (List page numbers and names of manufacturer.)

PRODUCTS FINISHING
MARCH, 1955

Page No.	Name of Manufacturer	Page No.	Name of Manufacturer

COMPANY_____

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CITY_____ ZONE____ STATE_____

NAME_____ TITLE_____

Your Monthly Source For Finishing Ideas

Please send additional information on the products shown on the following pages of this issue. (List page numbers and names of manufacturer.)

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MARCH, 1955

Page No.	Name of Manufacturer	Page No.	Name of Manufacturer

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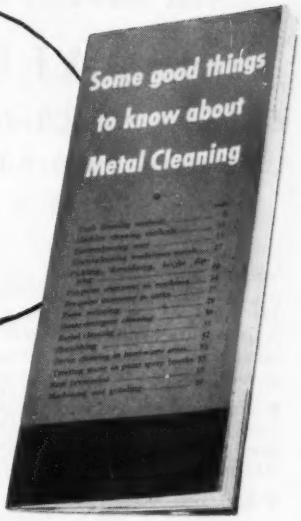
WHICH

METAL-CLEANING JOBS

WOULD YOU LIKE

TO IMPROVE?



Listed below are some of the operations discussed in Oakite's 44-page handsomely illustrated booklet on Metal Cleaning. Please check the list. Then let us show you how Oakite methods can give you better production with greater economy.

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

OAKITE PRODUCTS, INC.
20 Rector St., New York 6, N. Y.

I am particularly interested in improving methods for the following jobs:

- ☐ Tank cleaning
- ☐ Machine cleaning
- ☐ Electrocleaning
- ☐ Pickling, deoxidizing
- ☐ Pre-paint treatment
- ☐ Zinc phosphate coating
- ☐ Paint stripping
- ☐ Steam-detergent cleaning
- ☐ Burnishing, barrel cleaning
- ☐ Rust prevention

☐ Send me a FREE copy of your booklet *"Some good things to know about Metal Cleaning".*

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Company _____

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Across the range of polishing jobs . . .

Norton ALUNDUM* B Abrasive

adds the "TOUCH of GOLD" that steps up production and profits

In Norton ALUNDUM B abrasive you get a truly all-purpose polishing grain, expertly engineered to cut costs and improve product quality "across the board" in your polishing operations. Here are some typical advantages that mean top performance in every set-up:

- ***Uniform grain shape,*** the result of careful processing that eliminates flats and slivers, leaving only solid, blocky grains that stand up better and polish faster.
- ***Uniform grain sizings,*** with no oversize grains that mar the finish, no undersize grains that skip their share of work.
- ***High capillarity,*** assuring the easy absorption of adhesive that means longer lasting, better performing set-up wheels.
- ***Usable with cement or glue,*** it is equally firm-clinging and efficient with either.
- ***Made in all grit sizes*** from 20 through 240, to cover the widest range of polishing jobs, from roughing to fine finishing.

See your Norton Distributor

for prompt deliveries of Norton ALUNDUM polishing abrasive. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your phone directory, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

Finishing With The "Touch of Gold". In the finer grit sizes ALUNDUM B abrasive is unequalled for the polishing that means better looking products.

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G284

Making better products . . . to make your products better

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NORTON: Abrasives • Grinding Wheels • Grinding Machines • Refractories
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NICKEL-LUME

FOR BRIGHT NICKEL BARREL PLATING

The H-VW-M Nickel-Lume Barrel Plating Process is ideal for producing bright-from-the-barrel decorative nickel coatings on small automotive parts, jewelry, novelties, nail clippers, files, hardware, fasteners, screws, and similar items. The new process is an application of Nickel-Lume, which made its appearance a year ago as an outstanding development in a bright nickel for rack plating.

Barrel installations have been in operation in the field for some time with many enthusiastic users. An important feature of this bright-nickel barrel process, is the consistency of color maintained even in recessed areas, as in hard-to-plate threaded parts. Subsequent chromium plating can be handled with ease since the nickel deposit is very active and, unlike many bright barrel processes, is not brittle.

Advantages of Nickel-Lume Barrel Plating are:

Uniform Brightness—deposits, right out of the barrel, are uniformly bright with a pleasing "clean," white color even in hard-to-plate areas.

Low Stress—deposits are ductile and have a low compressive or tensile internal stress.

Activation Not Required—no activation is required between the nickel and chromium or other subsequent deposits.

High Tolerance To Impurities—organics are tolerated in greater concentrations than in other bright baths.

Complete Control—complete analytical control of all constituents.

Wide Operating Range—current density and temperature have a wide range with no resultant loss of brightness.

Good Corrosion Resistance—nature of the addition agent plus constant deposit characteristics give a high level of protection to the plated surface.

Stability—not a "fussy" bath—remarkably stable over long periods of operation.

Nickel-Lume for Barrel Plating is the direct result of continuous research conducted at H-VW-M . . . another example of Platemanship in action. Complete details and a new instruction manual will be forwarded on request.

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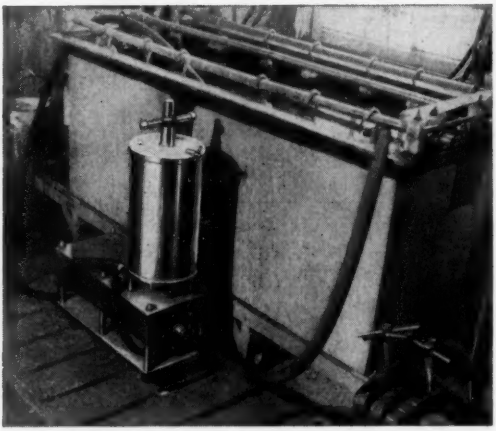
H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

Here's how to cut your losses

get better finished plated work — save time and labor



The *"Sealed-Disc"* Filter will remove all dirt, dust, and sludge from your plating solutions. You will no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc.

More and more platers testify to the remarkable savings in operating time and labor that the *"Sealed-Disc"* Filter gives them. These cost-minded platers get better finished plated work and have found that their solutions last l o n g e r. *"Sealed-Disc"* Filters, designed to meet plating room requirements, are smaller, more compact and portable, than ordinary conventional filters.

Regardless of the size or type of your installation, there's a *"Sealed-Disc"* Filter to "fit your job". You can depend on a *"Sealed-Disc"* Filter for positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness, proof against losses caused by rejects and reworking. Write for complete details or contact your regular plating supplier.

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We manufacture a full line of Mixers and Agitators covering a complete range of sizes, for mixing, blending, and dissolving. Stainless Steel Mixing Tanks are also available in a wide range of capacities. For full details and illustrations write for your free catalog.

VOLUME 19 NUMBER 6 MARCH, 1955

Products finishing

CONTENTS

Don't Sell Your Finishing Supply Salesman Short . . 25
Editorial

Mechanized Refrigerator Evaporator Fabrication and Finishing 26
By Ezra A. Blount, Editor

Evaluation of Etch Primers in Metal Coating Systems 42

Automatic Application of Drawing Compound Improves Forming and Processing 58
By Gerard H. Poll, Jr.

Spotlighting Finishing Progress
By Dr. Seymour Senderoff

—Nickel Plating from Sulfamate Baths 66

Practical Applications of Modern Products

—Surgical Instrument Manufacturer Installs New Oven to Boost Quality and Efficiency . . 82

—Carbide Pins Aid Buffing Operation 83

—Mechanically Cleaning Hot Forge Dies 84

Finishing Clinic 88

New Equipment, Materials, Processes 94

News of the Industry 142

Meetings of Interest to Finishers 155

The Finishing Touch 156

Opportunity Section 158

Index to Advertisements 159

Product Literature 160

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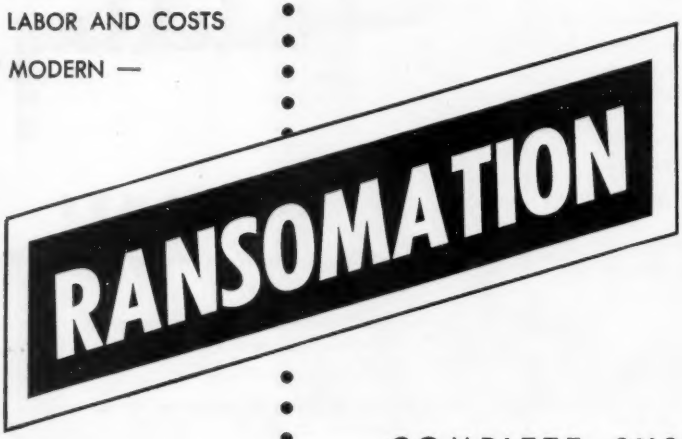

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AUTOMATION
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SEND SAMPLES

and we'll show you how much you can speed production and cut costs.

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the Perfect Combination

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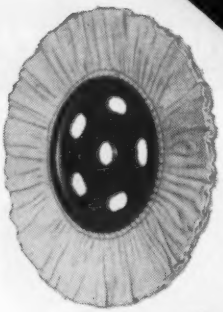

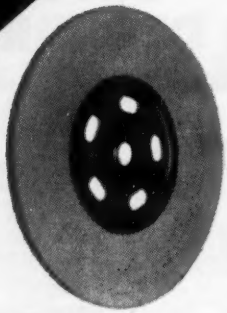

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These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

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Formax produces a complete line of buffing compounds in bar, tube and liquid form.

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ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

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INSTALL POWERS
Automatic Temperature Control
For All Metal Finishing Processes

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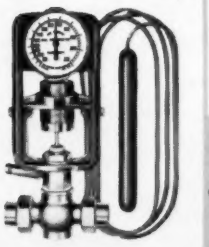

POWERS No. 11MF Self-Operating TEMPERATURE INDICATING REGULATOR

SEND THIS COUPON NOW for full information

(b94P)

POWERS

2

TECHNICAL DATA SHEET

NICKEL

If you plate — NICKEL
Too high a temperature can result in:

1. High consumption of organic addition agents
2. Rapid accumulation of organic decomposition products
3. Dull plate
4. Peeled deposits
5. Excessive evaporation

Too low a temperature can result in:

1. Dull plate
2. Low limiting current density
3. Peeled deposits
4. Poor throwing power
5. Burnt deposits
6. Anode polarization

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(Print name of process or type of plating)

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Company_____

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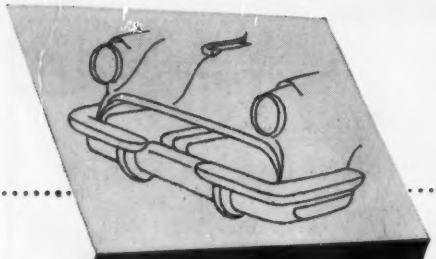

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CHEMICALS
and
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. . copper ball anodes . . Rochelle Salts . . . sodium and copper cyanides . . copper sulfate . . copper fluoborate.

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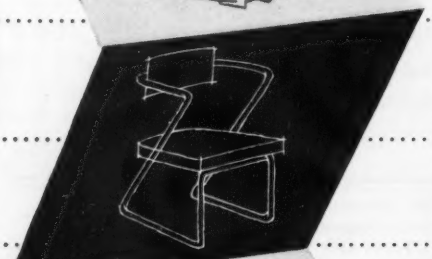
tin plating

. . . cast tin anodes . . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

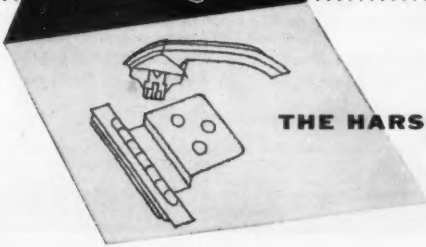


zinc plating

. . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate . . zinc fluoborate.

lead plating

. . . cast lead anodes . . . lead fluoborate.



silver plating

. . . silver cyanide.

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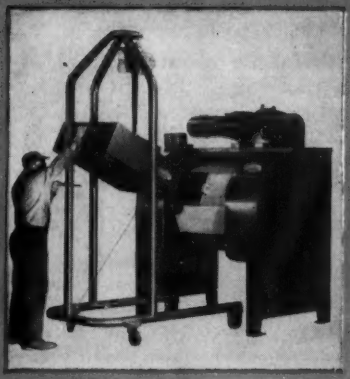
ALMCO Supersheen Speed Finishing

CASE HISTORIES CONSISTENTLY SHOW BARREL FINISHING

Cost Savings up to 95%

AMERICA'S FINEST, MOST COMPLETE LINE OF BARREL FINISHING EQUIPMENT MATERIALS and COMPOUNDS



Advanced Design SERIES

Models DB-200, DB-400, DB-800

This advanced design barrel has everything! Offers **maximum** versatility for micro-finishing of small precision parts to fast cutting down of large castings, forgings, etc. Infinite variable speed drive from 6 to 30 R.P.M. Positive magnetic brake and forward or reversing switch. Exclusive Almco cam-operated door.

Available 3 sizes, 13 models.

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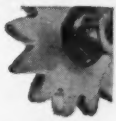
Albert Lea, Minnesota

Take This Short Cut to Lower Deburring and Finishing Costs

Here's the finest, most up-to-date lowest-cost method of finishing parts in America today. Our files are loaded with hundreds of case histories where Almco Supersheen Speed Finishing has saved staggering — almost unbelievable amounts of money over former finishing methods. In a recent review of 10 typical Almco Supersheen Barrel Finishing Installations, finishing costs average **80.1%** less than former methods!

BEFORE



AFTER

TYPICAL CASE HISTORY

Supersheen fixture machines deburred this sprocket with finishing cost reduction of over 40%.

If you produce parts of any kind that require finishing, why not enlist Supersheen's engineers to help you get a BETTER FINISH FASTER--AT LESS COST with INCREASED PRODUCTION.

FREE

Write today for 52-page fact-filled CATALOG. Tells how Supersheen can save **YOU** big money. Gives latest on new equipment, compounds.

Long-Lasting

Add to Beauty and Durability

IT IS NOT SURPRISING that leading manufacturers in many fields use Pittsburgh Industrial Finishes on their products.

By working closely with the technical and engineering staffs of these organizations, Pittsburgh produces tailor-made coatings of outstanding quality and performance to meet the most rigid requirements for durability and eye appeal.

For instance, for more than twenty-five years Pittsburgh has developed a variety of synthetic enamels which are used to coat the fine office equipment made by the Invincible Metal Furniture Company of Manitowoc, Wisconsin.

These finishes provide exceptional adhesion, toughness and durability. They are so easy to apply that production is speeded and manufacturing costs are reduced.

Invincible Metal Furniture is only one of thousands of industrial organizations served satisfactorily by Pittsburgh. This broad experience can be helpful in saving *you* both time and money. We'll be glad to have one of our engineers discuss your finishing problems with you at no cost or obligation. Wire, write or phone the nearest plant listed below.

PITTSBURGH

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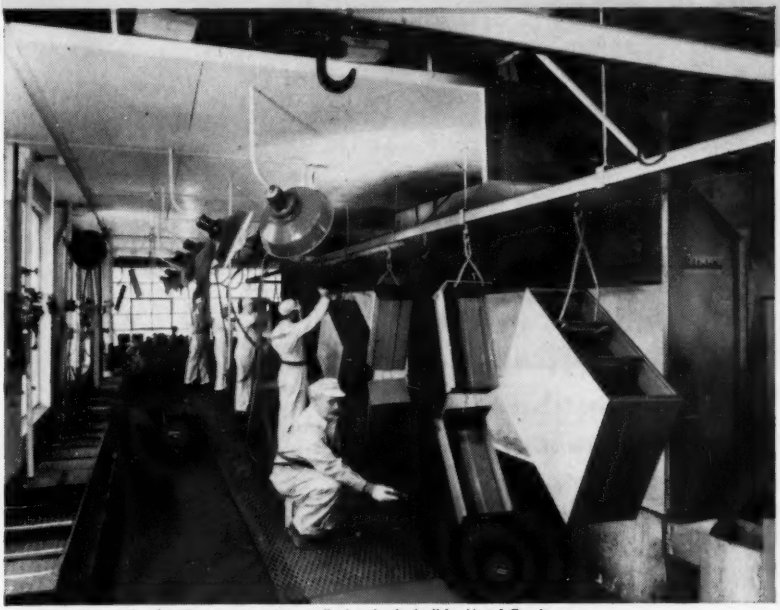
PITTSBURGH PLATE GLASS

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Pittsburgh Enamels

of Invincible Metal Furniture



Many thousands of gallons are used annually by the Invincible Metal Furniture Company on desks, filing cabinets and other office equipment it manufactures.

PAINTS

PLASTICS • FIBER GLASS

COMPANY

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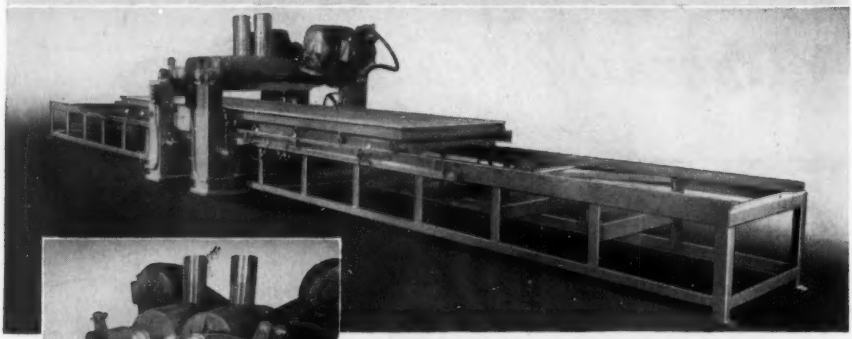
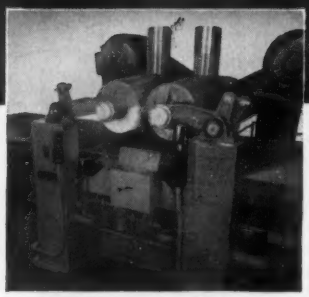
Cut Time! Cut Finishing Costs! with CENTRAL *Tandem Roll* POLISHING MACHINES





FEATURES

1. Central Push Button Control
2. Hydraulic Contour Control
3. Tandem Rolls for faster cutting and finishing
4. Two operations at one work set-up
5. Stepless adjustable stroke, 2" to full capacity
6. Machines made to any length
7. Table can be oscillated sidewise at the will of the operator.

Here's the solution to any polishing problem involving sheets, plates, rods, tubing, extrusions and many small items which may or may not require contour control. Tandem rolls provide for cut-down and finishing at one work set-up.

Many pieces such as electric, gas or oil range tops with side concave or convex moulding can be handled by incorporating auxiliary polishing rolls. These machines are rugged steel fabrications and powered with motors of ample capacity. They are electro-hydraulic or hydraulic controlled from a central operator's station, simple to operate, safe, effective and highly efficient.

These new Central Machines are — to the best of our knowledge — the ultimate in performance, economy and low initial cost. Firms operating these polishing machines for the past three years tell us our H-M Series Machines have paid for themselves in 8 to 12 months' time.

Tandem Roll Machine awarded A. I. M. Award of Merit for 1954.

Full information and specifications on request. Send us samples or tell us what you want to polish.

Also made in Single Roll Horizontal Series and Double Roll Vertical Series

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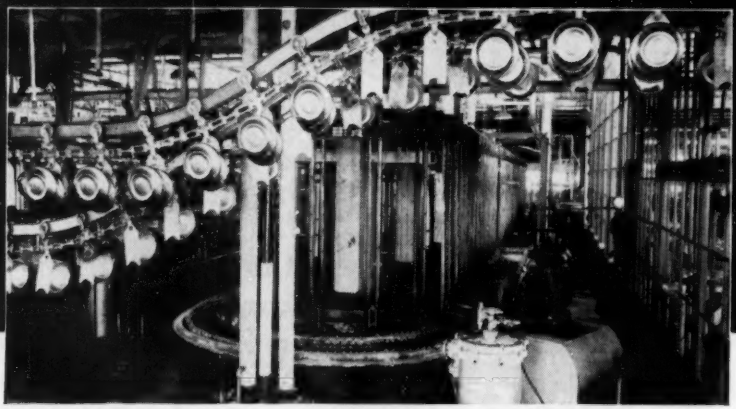
ENGINEERED
Plating Equipment



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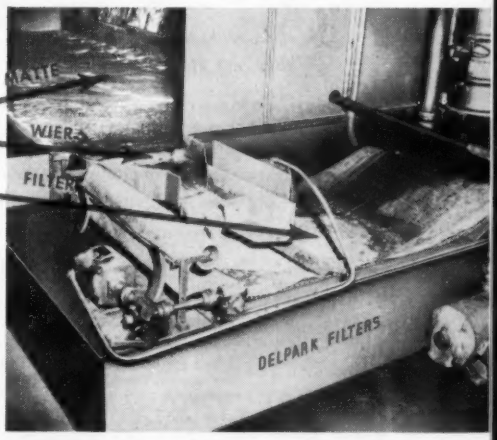

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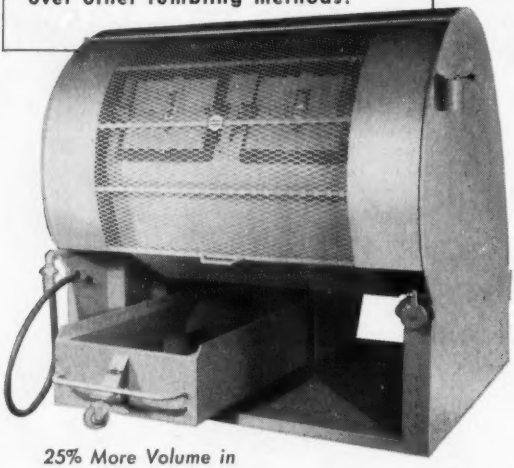

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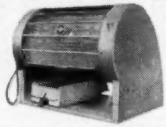

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Packard parts begin life with a Wyandotte bath

In the production of the new Packards for 1955, Wyandotte products are used in vital cleaning processes: ALTREX* for aluminum soak cleaning; INDUSTRIAL D in spray washers, to remove fabricating compounds and other soils from steel parts; R-2 as a rust inhibitor in spray rinses.

In fact, Packard has been using Wyandotte products for more than ten years — for more effective cleaning at lower use-cost. For in the manufacture of fine motorcars, quality is the foremost requirement — and cost is an important factor as well.

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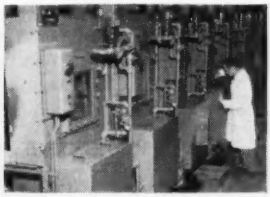
Call on Wyandotte to improve quality, cut costs

Packard uses Wyandotte cleaners in small soak tanks, spray washes, spray rinses.



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- Merely by switching from flats to *Unichrome Round Anodes*, another plant cut hard chromium plating time by a cost-cutting 20%.

THE FACTS are in. Working proof of greatly improved lead anode performance is being obtained in more and more users' plants. The new, special alloy cylindrical anode developed originally by United Chromium is contributing in a big way to better chromium plating operations.

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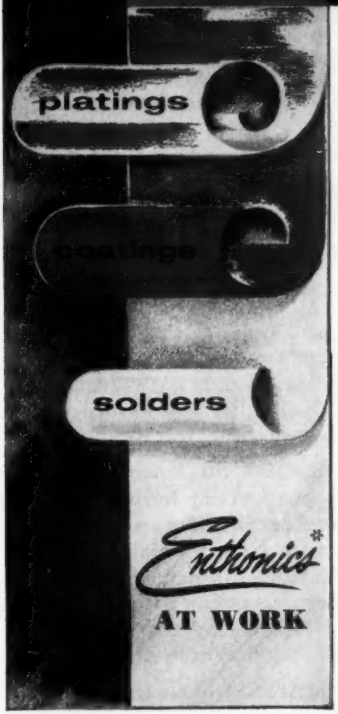

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STEEL	NICKEL • COPPER • SILVER • ZINC • CADMIUM	**ENSTRIP "S"** — additive for sodium cyanide solutions. **ENSTRIP "A"** — prepared compound containing sodium cyanide. **ENSTRIP "103"** — alkaline electrolytic stripper without cyanide.
COPPER • STEEL	TIN-LEAD COATINGS	**ENSTRIP "TL"** — speedy alkaline stripper.
ALUMINUM • COPPER • STEEL	HEAVY CHROMIUM COATINGS	**ENSTRIP "CR-5"** — rapid acid-type stripper.
COPPER ALLOYS	NICKEL • TIN ZINC • LEAD CADMIUM	**ENSTRIP "165-S"** — additive for acid solutions.
ZINC DIE CASTINGS	CHROMIUM • NICKEL • COPPER	**ENSTRIP "L-88"** — acid electrolytic stripper.
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Cowles NS eliminates soap scum build-up to assure long tank life and prevent deposition of scum on cleaned parts. High emulsification properties of Cowles NS keep the tank clear and reduce the costly, time-consuming process of dumping, cleaning and recharging tanks—jobs can be run *up to twice as long* without changing.

Cowles NS provides outstanding cleaning results and its flexibility permits its successful application in both porcelain enamel plants and in plating plants.

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Pf editorial

Vol. 19, No. 6

MARCH, 1955

Don't Sell Your Finishing Supply Salesman Short, ...

Because (whether you know it or not) he is contributing a great deal to the efficient, economical, and successful operation of your finishing shop or department. He is trained, both by education and practical experience, so that he can offer valuable advice and assistance to you in the solution of your day-to-day finishing problems. Actually, he is more than a *salesman;* he is a *technical service representative.*

The present situation represents a definite departure from conditions which existed 20 to 30 years ago, which some of us can still remember. Two definite trends in industry are in part responsible for this change. First, industry has expanded so rapidly that there has not been the opportunity to train technical men in the increasingly complicated finishing processes, and at the same time let them acquire skill in supervision. Where production conditions justify it, and where men can be found, the technical men work in finishing departments to handle the technical problems, while the department supervisor is left free to handle personnel supervision. With the increasing specialization in industry, and increased emphasis on efficient production and good employee relations, the tendency has been for industry to select men to supervise finishing departments who were trained to supervise, but not necessarily trained in the solution of finishing problems or the proper application of finishing techniques and processes.

At the same time, suppliers of finishing equipment and processes realized that technically trained representatives were required to supervise the installation and proper operation of their equipment, in the interest of good customer relations. And so the *salesman* became the *technical service man,* backed by the customer service department and the research laboratories of his company.

This reflects, in part, the growth, development, and increased stature of the Finishing Industry, in that products are now sold more on the basis of merit than by personal persuasion.

Worthy of note also is this fact: While your technical service man is assisting you with the solution of today's problems, the research laboratories of his company are working to solve the problems with which you will be faced tomorrow!

Ezra A. Blount

—EDITOR

The 1955 Coldspot "Super-Mart" refrigerator is finished in white enamel with tinted liner and gold trim.

(Photo courtesy Seeger Refrigerator Co., Evansville, Indiana.)

Mechanized Refrigerator Evaporator Fabrication and Finishing

By EZRA A. BLOUNT
Editor

Seeger Refrigerator Company, Evansville, Indiana, manufacturer of Sears' Coldspot refrigerators, produces an all-aluminum evaporator unit with a minimum of hand operations and handling. Features of the setup include full-automatic cleaning, pickling, and anodizing on conveyorized machines.

PF FEATURE

PRODUCTS of the Seegar Refrigerator Company include domestic and commercial refrigeration units, freezers, and dehumidifiers. The Evansville plant specializes in domestic refrigerators. Seeger engineers and production men are particularly proud of the design and performance of the Coldspot "Super-Mart" refrigerator. This unit has a number of attractive features, including: frozen food storage; meat and beverage compartment; crisper; conventional storage compartment; and a top shelf surrounded by a cold plate. All of these compartments operate at different, controlled temperatures and all have automatic defrosting.

Equalling in importance the refrigeration unit itself is the evaporator. Fabricated from steel, and then galvanized and tin plated in the early days of refrigeration, the modern evaporator is formed from aluminum and anodized for protection against corrosion and abrasion.

Seeger evaporators employ the

Fig. 1—One of the first steps in the manufacture of Seeger's tube-on-sheet evaporator is to cut and form aluminum tubing to the required shape. This is accomplished on an air-operated pattern-type forming fixture. Operator is shown removing a completed tube form from the machine.

Historical Sketch

THIS brief outline tells how a small plating shop grew to become one of Evansville's major industries.

Seeger Refrigerator Company has a continuous identity as a manufacturing organization in Evansville, Indiana dating from 1883. In that year, Adam Schroeder formed a partnership for plating silverware. As the business expanded to include the manufacture and plating of headlight reflectors, it was incorporated in 1903 as The Schroeder Headlight Company. In 1908 the company acquired, through purchase, rights to manufacture electric arc headlights and turbo generators. This led the company into new fields and further expansion and growth. In 1918 the company management was changed along with the company name which became the Schroeder Headlight and Generator Company. In 1920 the name, Sunbeam Electric Manufacturing Company, was adopted.

An entirely new line of products was introduced in 1921 when the Sunbeam Domestic Appliance Company was formed to manufacture washing machines. Although the line of washing machines was discontinued in 1926, a new era was begun in 1927 when Sears, Roebuck & Company placed Sunbeam lighting systems in the Sears catalog. The connection with Sears was followed in 1930 by production of Coldspot household refrigerators. Production of Coldspot refrigerators prior to World War II was at the rate of approximately 300,000 annually.

During World War II, Sunbeam produced artillery shells, aircraft booster pumps, tension struts, aircraft turret parts, tank engine parts, cartridge cases, rifle grenades, artillery shell containers, and other products. This manufacturing effort was recognized by the award of the Army-Navy E flag with three stars.

In 1945 a merger of Sunbeam with the Seeger Refrigerator Company, a refrigerator cabinet manufacturer in St. Paul, Minnesota was effected, the new company being known as the Seeger-Sunbeam Corporation. The name was changed to Seeger Refrigerator Company in 1946, to avoid confusion with other companies using the Sunbeam trade name.

Products of both the Evansville and St. Paul divisions of Seeger Refrigerator Company are Coldspot refrigerators, food freezers, and other allied products.

tube-on-sheet design, in which aluminum tubes are brazed to blanked aluminum sheets, and the assembly is then formed into the completed evaporator. First step in manufacture is the winding of aluminum tubing on pattern-type fixtures. The tubing is wound from a coil, as can be noted in Fig. 1, cut off, and then stretched tight by means of an air-actuated device. Ends are burred and upset. The operation of stretching the tubing to make an exact fit adds rigidity to the form as well as ensuring a unit of accurate dimensions. As can be noted in the illustration, a conveyor transports the formed tubing to the brazing area where tubes are joined to the other elements of the evaporator.

The evaporator shell and shelf are blanked from 0.040 inch pattern aluminum sheet and formed or pierced as required. The formed sheets are then degreased in the Blakeslee vapor degreaser shown in Fig. 2 to re-

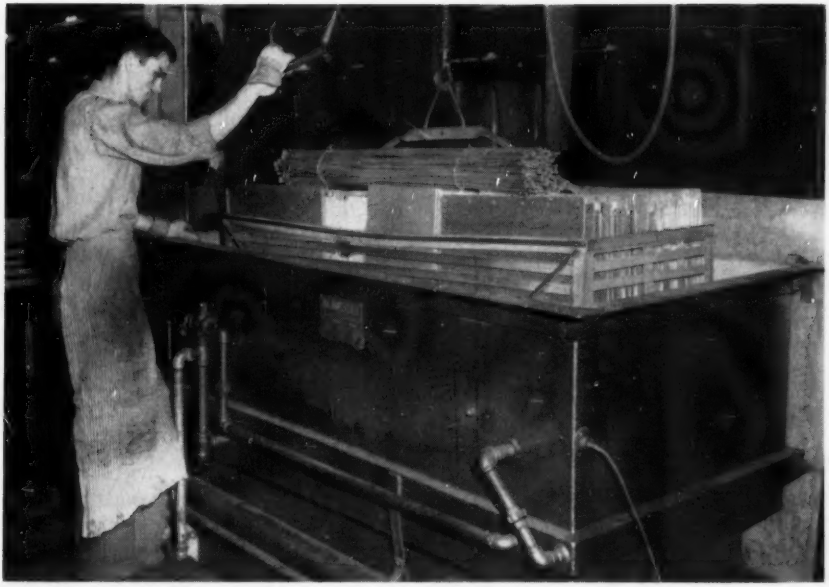


Fig. 2—Blanked, pierced, and formed pattern aluminum sheets and tubing are degreased in a Blakeslee vapor degreaser prior to being brazed.

Fig. 3—On the conveyor belt in the foreground tubes are correctly located on formed sheets and clamped into place for brazing. The units feed smoothly from the conveyor belt onto the brazing chain conveyor. Of particular interest is the quality control instruction board located just in front of the furnace (center background of photo) on which the various models of evaporators are displayed showing how the tubes should be positioned.

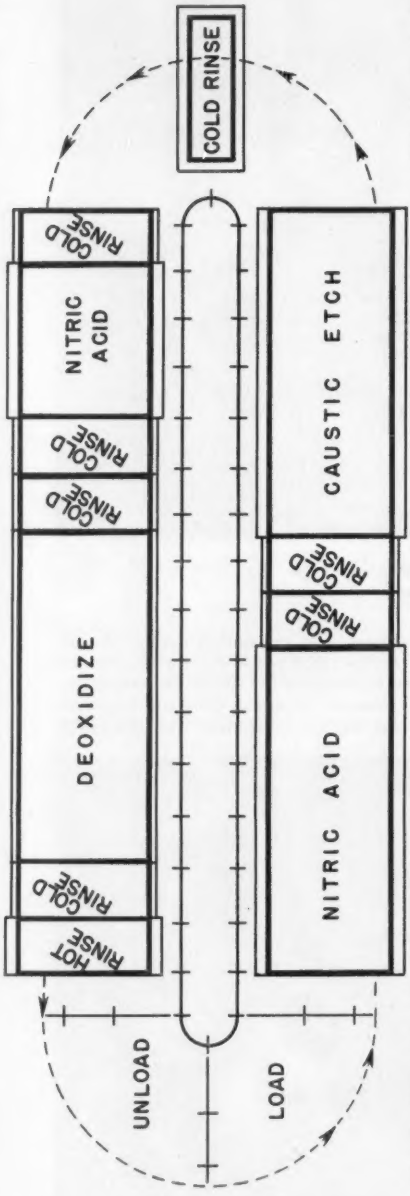


Fig. 4—Plan view of the Hanson-Van Winkle-Munning automatic cleaning conveyor showing path of conveyor chain and location of processing tanks. *(Illustrations courtesy Seeger Refrigerator Company, Evansville, Indiana.)*

move surface oil, dirt and other contamination.

Aluminum tubing joins the degreased aluminum sheets on the assembly belt which feeds the units into the brazing furnace. The tubing is positioned accurately on the sheet, and Airco 44, Alcoa 30 or 33 brazing flux is applied from a syringe. The tubing, having been properly positioned on the sheet, is clamped in place with a Nichrome spacer so that the proper position will be maintained during the brazing operation. Filler metal is then placed in proper position under the tubing, and the clamped assembly feeds into the brazing furnace (Fig. 3) on a chain conveyor belt.

Temperature in the gas-fired brazing furnace is maintained in the range of 1140 to 1180 deg. F. and the chain speed is approximately 36 inches per minute. The chain speed and oven temperature must be synchronized and adjusted according to the brazing load so that the proper amount of heat to accomplish good metal joining is available.

Leaving the brazing furnace, the evaporator sheets pass through a Seeger-designed power spray washer which serves as a quench and a means of removing all residual brazing flux or other soluble chemicals from the aluminum surface.

In the spray washer, water at a temperature of 180 deg. F. is forced through 24 nozzles at a rate of 200 g.p.m. The water is heated by Platecoils and the temperature is controlled by a Powers temperature regulator.

Automatic Cleaning Process

Before the aluminum shelves and wrapper that will form the complet-

ed evaporator can be anodized, they must be thoroughly cleaned and etched, and this is accomplished in an automatic, elevator-type machine manufactured by Hanson-Van Winkle-Munning Company (Figs. 4 and 5). The flat aluminum parts, having been brazed and washed, are loaded into the stainless steel, Miccrosol-coated baskets which may be seen clearly in the foreground of Fig. 5, and processed through the following cleaning and etching cycle as they are transported around the oval conveyorized machine:

1. Immerse for 6 minutes in 5 per cent nitric acid held at 150 deg. F. Air agitation. Stainless steel tank and air pipes.

2. Flowing cold water rinse, ½ minute.

3. Flowing cold water rinse, ½ minute.

4. Etch for 6 minutes in Pennsalt AE-16, 4 oz./gal., held at 140 deg. F. pH above 13.0.

5. Cold water rinse, 1 minute.

6. Cold water rinse, 1 minute.

7. Dip for 3 minutes in 10 per cent nitric acid at room temperature. Stainless steel tank.

8. Cold water rinse, 1 minute.

9. Cold water rinse, 1 minute.

10. Immerse for 6 minutes in Clepo 180-K deoxidizer, 8-12 oz./gal., at room temperature. Stainless steel tank. This chromic-phosphoric acid mixture has the effect of delaying the natural oxidizing tendency of the aluminum, and forms a film on the parts that stands up for 48 to 72 hours.

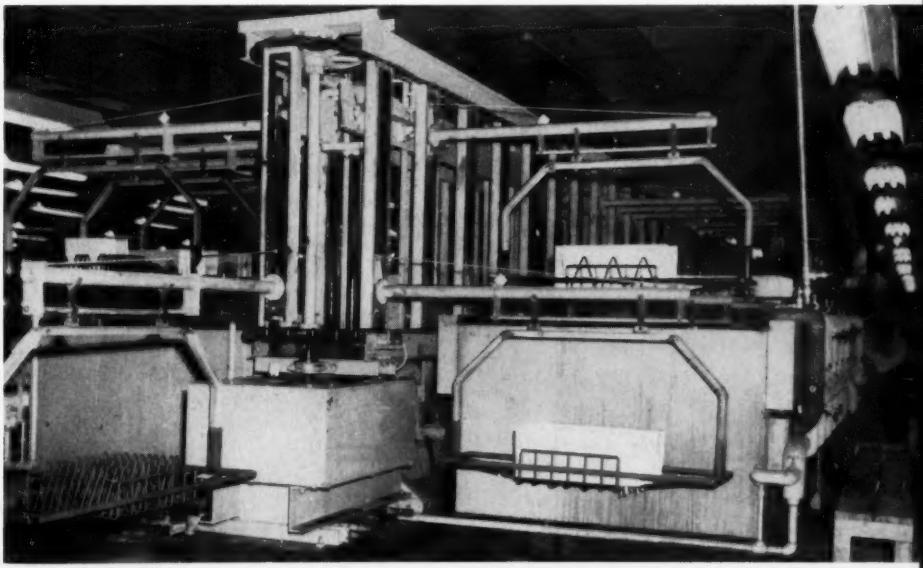


Fig. 5 — View of the loading area where brazed tube-and-sheet assemblies are loaded in insulated baskets for processing through the cleaning cycle.

Evaporator Finishing

11. Cold water rinse, 1 minute.
12. Hot overflowing water rinse (120 deg. F.).

The tanks used with the cleaning machine are each 4 feet deep and 6½ feet wide. The length has been determined by the time cycle in each process. Several of the processing tanks, as well as all the tank bridges, are constructed of stainless steel.

Rinse tanks are so designed that water circulates through the tank in a general circular movement before passing out of the tank over a dam-type overflow. Overflow water from alkaline rinse tanks is combined with the rinse water from acid rinse tanks to effect partial neutralization before the waste water enters the waste disposal lines.

Fig. 6—In this Seeger-designed rotary flusher, cleaned and etched evaporator sheets are rinsed thoroughly inside and out to remove all traces of processing chemicals.

Tanks to be held at elevated temperatures are equipped with Platecoils through which steam is passed. Temperatures are controlled by automatic temperature regulators.

Conveyor arms on the automatic cleaning machine are spaced on 30-inch centers. The stainless steel baskets which transport the evaporators through the process are designed to hold 12 or 24 units. The machine will process 1 basket of parts per minute. It requires 32 minutes for a complete cycle. Thus, the machine capacity is 720 to 1440 evaporators per hour.

Following the completion of the cleaning and etching operations, the evaporators are processed through a Seeger-designed rotary tube flusher (Fig. 6) located near the unloading station of the automatic cleaning machine. During the 3-minute cycle, the tube interiors are flushed thoroughly with water at 180 deg. F., and dried with air to ensure that no chemicals from the cleaning cycle remain on any part of the metal surface. The rotary tube flusher holds 24 units and has a capacity of 480 units per hour.

Assembly of the Evaporator

After the tube flushing operation, units are inspected for skips in the brazing, misplaced tubes, and other possible flaws, and processed through assembly. Evaporator assembly is accomplished by means of all necessary operations arranged in logical sequence on both sides of a 4-foot-wide conveyor belt which runs 200 feet through the assembly area. A typical series of such operations (the exact type and sequence of which is determined by the refrigera-

tor model) is as follows:

1. Shelves and wrapper identified.
2. Stainless steel ferrules inserted in tubes at joint positions.
3. Weld shell to shelf with heliarc torch.
4. Upset flange to provide a stronger joint and add filler metal.
5. Weld on header or accumulator.
6. Weld assembly to shell.
7. Form shell-to-shelf tubing.
8. Form shell into U-form (foreground, Fig. 7).
9. Form header or accumulator into position.
10. Rivet shelf to shell.
11. Rivet back to evaporator and hangers to shelf.
12. Weld on shelf inlet tube subassembly.

The assembled units are inspected, and those passing inspection are placed in a basket on an overhead monorail conveyor to be transported through leak testing and on to the anodizing machine. While in the conveyor baskets, the evaporators are charged with nitrogen gas at 250 p.s.i. pressure.

Evaporators passing the water leak test successfully are removed from the conveyor and checked for gas pressure. They are then transported to the automatic anodizing machine for final surface treatment.

Anodizing Products

Evaporator units are anodized on an oval, continuous, H-VW-M elevator-type automatic anodizing machine (Fig. 8) similar to the cleaning machine previously described. The units are racked on special racks which are firmly clamped to the conveyor arms, as shown in Fig.

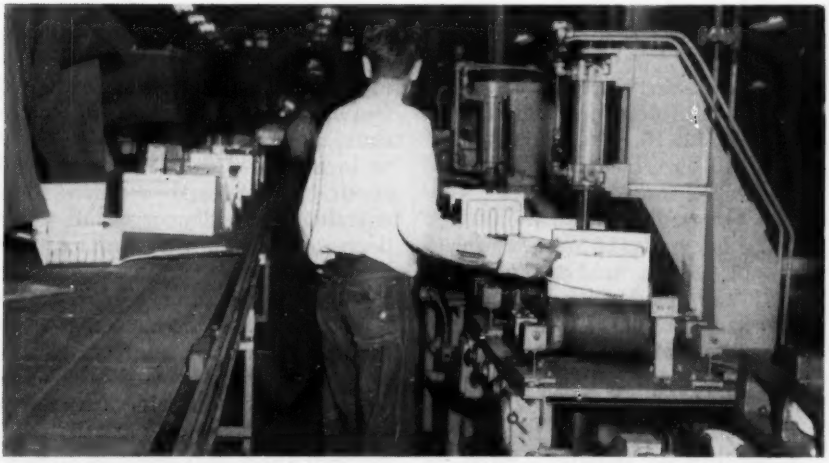


Fig. 7—A view of a small portion of the 200-foot-long evaporator assembly belt where the various elements of the evaporator are joined and the evaporator is formed into its proper U-shape. Hydraulic forming presses are shown at right.

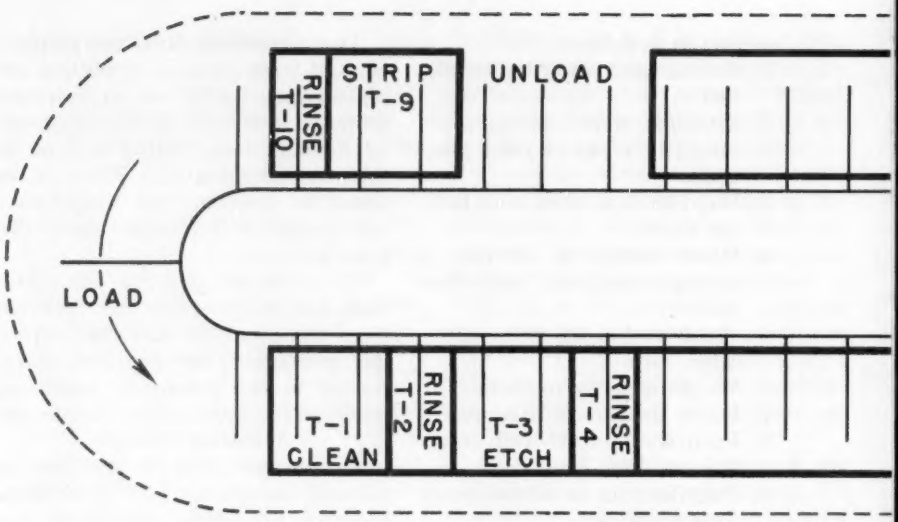


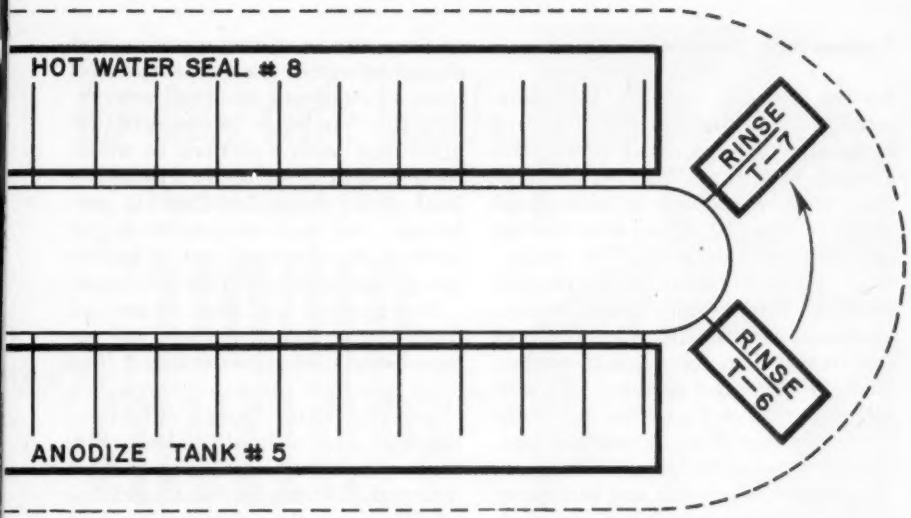
Fig. 8—Plan view of the Hanson-Van Winkle-Munning conveyorized anodizing machine. *(Illustration courtesy Seeger Refrigerator Company, Evansville, Indiana.)*

9. The anodizing process cycle is as follows:

1. Electroclean for 2 minutes in Pennsalt MC-1, 8-10 oz./gal., held at 190 deg. F.
2. Cold water rinse, 1 minute.
3. Caustic etch for 2 minutes in Pennsalt HE-16, 4 oz./gal., operated at 140 deg. F. pH is controlled between 12.7 and 13.0.
4. Cold water rinse, 1 minute.
5. Anodize for 15 minutes in 15 per cent sulfuric acid at 72-78 deg. F. The current density is regulated to produce an anodic film of 140 to 160 ampere-minutes. Lead lined tank.
6. Cold water rinse, 1 minute.
7. Cold water rinse, 1 minute.
8. Seal in hot, deionized water for 15 minutes at a temperature of 208 deg. F. Stainless steel tank.
9. Drain and cool.
10. Unload (three positions).
11. Strip tank for empty racks—three stations.
12. Water rinse for empty racks.

The oval Hanson-Van Winkle-Munning anodizing conveyor is 60 feet long and is fitted with 47 carrier arms. Forward travel of the conveyor is at the rate of 3 ft./min. and about 45 minutes are required for a complete cycle. Tanks are all 4 feet deep and 5 feet wide, and of sufficient length to permit accomplishment of the required time cycle in the solution in question.

Evaporators are clamped to the conveyor carrier arms by means of Miccrosol-coated, spring loaded cast aluminum C-clamps (Fig. 9) with exposed aluminum contacts. Electrical connection from the conveyor arm to each evaporator is made by means of separate spring clamps.



For sizes and models of evaporators different from the one shown in Fig. 9 various rack designs are employed. Panelyte (plastic) racks with Nylon screws and titanium contacts are used for some models. Other racks are made from Dynakon (plastic) rods and fittings, with titanium, aluminum, steel and copper employed in various elements of the assembly. Titanium is of particular interest because its oxide film, formed on the contact surface, does not insulate against the passage of electricity, as does a similar film formed on aluminum racks or contacts.

Auxiliary equipment required for the anodizing tank includes two 50-ton Carrier refrigeration units which cool water to 50 deg. F. This water is then circulated through a Karbate heat exchanger along with the sulfuric acid anodizing solution. The anodizing solution is thus cooled to the desired temperature. A Duriron pump and Saran-lined pipe are employed in pumping the sulfuric acid from the lead lined anodizing tank through the Karbate heat exchanger and back to the anodizing tank. Powers No. 11MF temperature regulators are employed on this tank as well as other processing solutions operated at elevated temperatures.

Power for anodizing and electrocleaning is furnished by a bank of Udylite-Mallory 750 ampere, 24 volt selenium rectifiers which provide a total of 12,000 amperes at 24 volts. The setup includes powerstats, regulators, and a system for balancing or distributing the electrical load. Engineers in the control group change power settings and voltage on panel boards, such as the one shown in Fig. 10, so that the proper number of ampere-minutes for the anodizing cycle is provided.

To remove processing steam vapor and other fumes, one 52,000 c. f.m. exhaust fan is provided for the anodizing machine and a similar fan

for the cleaning machine. Ducts are used to guide the fumes to a central exhaust system located under the factory floor. Stainless steel tank exhausts are employed on nitric acid tanks or other locations where fumes are corrosive to steel. The underfloor exhaust system is a concrete opening, lined with Ceilcote protective coating material. Water sprays are installed in the exhaust system, and can be used if required to knock down corrosive fumes so that only uncontaminated air is released outside the factory.

Evaporator Processing and Inspection

Anodized evaporators are unloaded from the anodizing machine and placed in carrier baskets suspended from an overhead monorail conveyor. This conveyor transports the units past testing stations at which the nitrogen pressure is checked, a final under-water leak test is performed, and each evaporator is put through an electrical test to ensure the proper anodized film thickness.

Evaporators are then removed from the baskets, couplers are removed and nitrogen discharged. The units are then processed through a rotary hot water flusher similar to the one previously described (Fig. 6) in which the units are washed thoroughly inside and out, and dried. They are then fed down a belt

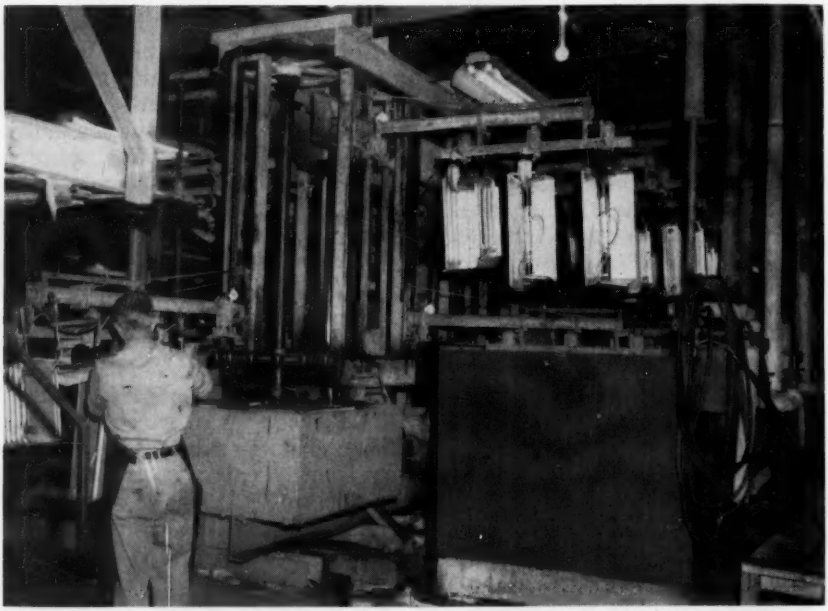


Fig. 9—View of the loading station of the automatic anodizing machine. Operator is clamping evaporators on racks mounted firmly on the conveyor carrier arms.

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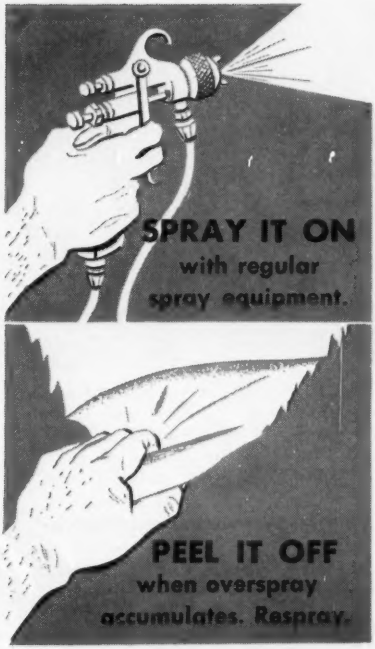

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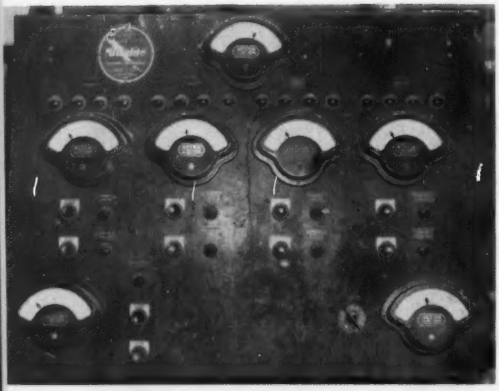

Fig. 10 Typical control board installed as an aid to control engineers who must regulate anodizing current to obtain specification anodic film on evaporators.
(PRODUCTS FINISHING Staff Photos.)

conveyor for final mechanical adjustment and inspection. Following this inspection they are placed on another overhead conveyor (in baskets) to be processed through a dehydration oven (10 minutes at 300 deg. F.), after which they are ready to proceed to the refrigerator final assembly to become an important part of a completed household refrigerator.

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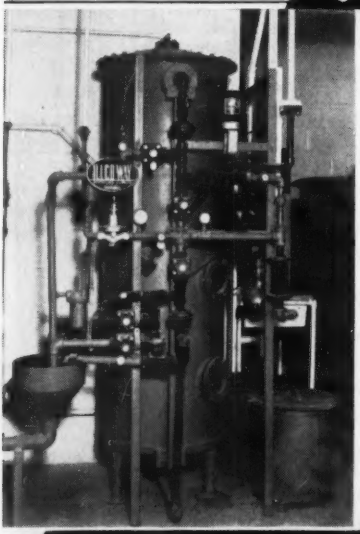

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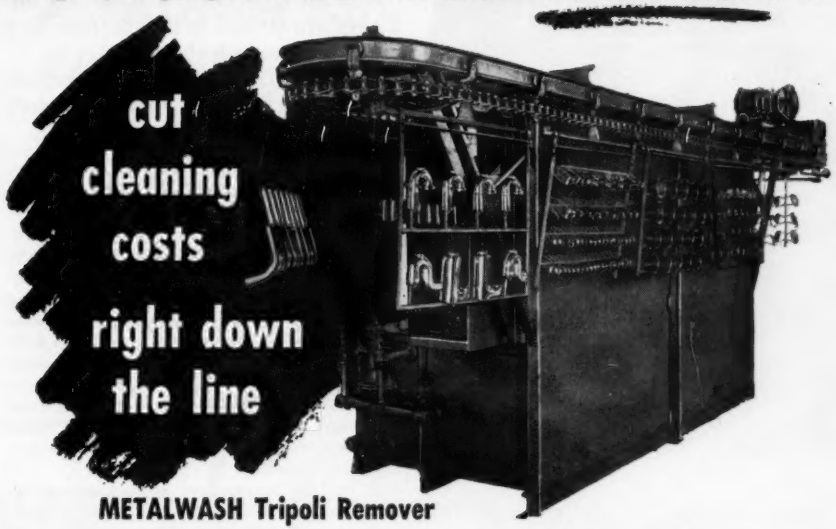

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cargo airplanes are being manufactured, "Alodine"* is used in chemically treating detailed parts for corrosion resistance and paint adhesion, to protect such highly stressed parts from weathering and corrosion.

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FINISHING ROOM AIR CONDITIONING UNITS—Need for specially formulated finishes for room air conditioning units, capable of withstanding extreme moisture to which interior parts are subjected, is discussed in a semi-technical bulletin which may be obtained from Room 7145-D, **Finishes Division, Du Pont Company,** Wilmington 98, Del. Proper techniques for applying the finish are also explained.

In noting the outdoor exposure requirements of a cabinet, the bulletin emphasizes the finishing problems created by construction designs involving sharp edges, welded joints, louvers and corners over which it is difficult to apply an unbroken film of adequate thickness.

The following steps in the finishing system are stressed: metal preparation (cleaning and phosphatizing); selection of moisture resistant primer; application of a continuous primer film of adequate thickness; baking or curing primer; selection of proper topcoat enamel; application of topcoat enamel in a continuous film of adequate thickness; baking or curing topcoat enamel.

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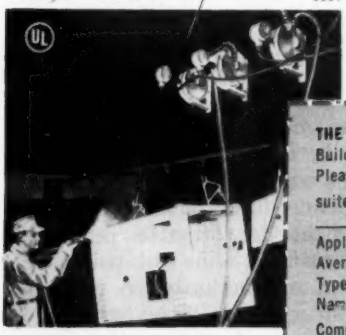

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Evaluation of Etch Primers in Metal Coating Systems

TESTS on a one-coat baked enamel finish on a number of metals under severe hot weather conditions (16 hours 100 per cent at 160 deg. F., 8 hours cooling off and condensation) indicates the benefits to be derived from the addition of an etch primer to the coating system.

On aluminum, for example, the baked enamel finish blistered in one day, whereas no change in the appearance of the finish was noted after 21 days when the baked enamel was applied over a baked etch primer. A similar situation was noted with regard to mild steel.

When mild steel was zinc plated or cadmium plated prior to paint finishing, blistering of the baked enamel under the humidity test was eliminated by the use of an etch primer prior to the final finish. In the case of brass, also, when the paint finish was applied direct to the metal or over a coating of tin or nickel plate, the addition of an etch primer coat to the system improved the resistance of the final paint finish to deterioration under the humidity test.

It is stressed that no liberties can be taken with the use of pretreatment primers. They should be applied to chemically clean metallic surfaces, but this statement requires some qualification, and further, exceptions do arise, as shown below.

By chemically clean, freedom from all extraneous matter such as oil and grease, and loose dirt, old paint, print markings, and so on, is inferred. Scale and corrosion products must also be absent. Thus mill scale of hot rolled iron and steel, and heat treatment and welding scales, must be removed. On the other hand, the thin scale or discoloration caused by spot welding does not diminish the performance substantially. Rust must be removed, but that very light superficial rusting which is almost imperceptible may not be harmful. The work must be dry, but, as the pretreatment primer contains water, that slight condensation of moisture under damp conditions that sometimes forms upon the work during spraying, is not objectionable, whereas it may be disastrous with other finishing media.

The pretreatment primer should not be applied to phosphatized steel and iron. The reasons are obvious; first, both phosphatizing and pretreatment primer are not required, and second, the phosphatizing converts the metal to a relatively inert surface which mitigates against the etch primer fulfilling all its functions during the film formation period. At the same time, some etch primers do perform satisfactorily on phosphatized steel, and they can be useful in finishing steel assemblies upon which phosphatized components have been assembled. Such a prac-

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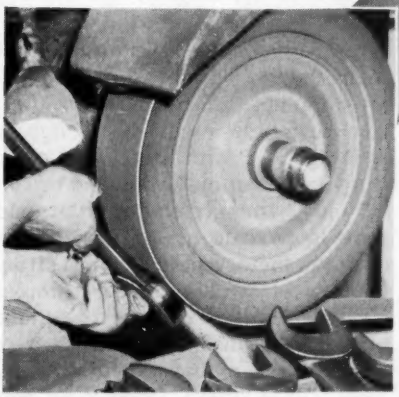

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tice entails a careful selection of etch primer.

A study of the performance of etch primers on hot rolled black steel sections under accelerated test conditions was made. The intention of the investigation was to assess the possibilities of the pretreatment primer after cleaning processes used in practice. In all cases thorough cleaning to remove dirt and grease was employed. Then one set of samples was shot blast and primed immediately. A second set was allowed to rust after shot blasting (a shortcoming often found in practice), and the excess rust only removed by lightly rubbing over with steel wool. The third set of samples were wire brushed only, thus removing rust and some loose scale, and representing a common factory practice with structural steel work. All the samples were sprayed with pretreatment primer, and finally all of them were finished with a coat of synthetic enamel. Throughout, each coat was separately baked.

Under salt spray conditions, the shot blast samples performed much better than all the others, and the rusted specimens failed quickly under test. The scaled samples did not show visible signs of deterioration other than slight blistering but adhesion was poor.

Generally speaking, the tests show the undesirability of finishing over scale or rust.

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sion. Usual process conditions are:

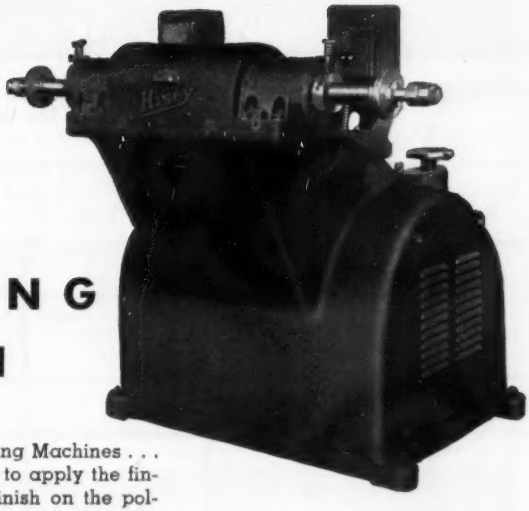
1. Trichlorethylene degrease.
2. Immerse for 20 minutes at 100 to 140 deg. F. in 15 per cent by volume sulfuric acid containing 5 per cent (by weight) chromic acid.
3. Thorough rinse and dry.

This treatment is one employed not only for paint adhesion, but also to produce uniformity of oxide coating prior to resistance welding of wrought forms of aluminum and aluminum alloys. The pretreatment primer adheres after this processing as efficiently as it does on clean, untreated light alloy.

The pretreatment primer also adheres perfectly and gives excellent service on anodized aluminum surfaces, whether or not the anodic film is sealed.

Zinc surfaces (castings, hot galvanized and electroplated coatings) are chromate passivated when destined for service under damp conditions to prevent or retard the formation of "white rust." The pretreatment primer takes quite well over such treated surfaces. Cadmium plating likewise may be chromate passivated for further improving its performance as a protective coating. When it is necessary to use the etch primer type over passivated cadmium, the primer should be carefully selected because, while performance is excellent on untreated cadmium plate, it varies from one primer to another when applied over passivated cadmium surfaces.

The etch primer exhibits excellent adhesion to tin (as hot tinned or



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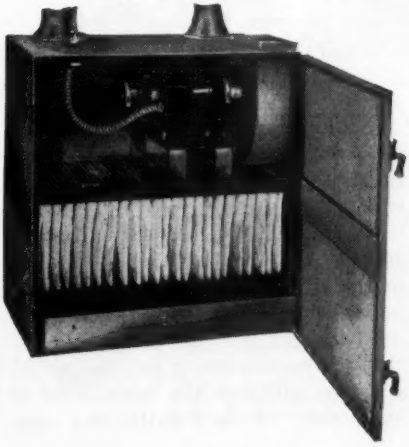

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Table I

TESTS ON PRETREATMENT PRIMER AND BAKED SYNTHETIC ENAMEL APPLIED TO CHEMICALLY TREATED METAL SURFACES

Each cycle consists of 1 day dry heat, 1 day cold, and 2 days wet heat.

Sample No.	Base Metal Surface	Performance Under Test	
		One Cycle	Two Cycles
1	Aluminum, chromic/ sulfuric acid pickled.	No deterioration, other than slight loss of gloss.	No blistering or other deterioration. Scratch and bend tests perfect. Could not be scraped off with thumb nail.
2	Aluminum anodized.	ditto	ditto
3	Phosphatized steel.	ditto	No blistering. Scratch test and thumb nail test perfect. Filmed flaked off on bending.
4	Zinc plate, chromate passivated.	ditto	No blistering or other deterioration. Scratch, thumb nail and bend tests perfect.
5	Cadmium plate, chromate passivated.	Very slight blistering.	A little blistering. Thumb nail test perfect. Chipping on scratch test. Blisters tore and caused flaking on bend test.
6	Phosphatized zinc plate.	No deterioration, other than slight loss of gloss.	No blistering. Scratch, thumb nail and bend tests perfect.

electroplated coatings), to nickel plate, to silver and gold plating, and it should be specially noted, to chromium plate and to stainless steel. The latter two examples are very important with name plates and other products where the highlights are polished against an enameled background of black or other color. The good adhesion refers not merely to initial quality, but also to that after severe tropical exposure.

Table I summarizes some test results on the finish (comprising pretreatment primer and baked enamel) on a variety of "chemically treated" surfaces. Regarding the test conditions, the dry heat was 16 hours at 160 deg. F., the cold exposure 6 hours at —40 deg. F., and the wet heat 16 hours at 160 deg. F., the test panels being left in the respective cabinets the remainder of each day. These results give con-

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Table II

PRETREATMENT PRIMER AND BAKED SYNTHETIC ENAMEL TESTED FOR 1 DAY OF DRY HEAT AND 3 DAYS WET HEAT

Sample No.	Base Metal Surface	Performance
1	Bright Chromium (Steel, polished, heavily nickel plated and chromium flashed).	No deterioration other than a little loss of gloss; scratch, thumb nail and bend tests satisfactory.
2	Stainless Steel (18% chromium, 8% nickel; polished).	ditto
3	Heavy Silver Plate (on copper).	ditto
4	Gold Plate (flash on silver plated brass).	ditto

firmation that the behavior on chromate pickled aluminum, anodized aluminum, and chromatized zinc is entirely satisfactory. That on phosphatized zinc is also shown to be good. The results on phosphatized steel and on chromated cadmium are not so excellent, but nevertheless, considering the severity of the test exposure, they are reasonable.

Table II refers to rather special metal surfaces, which often present finishing problems, particularly chromium plate and polished stainless steel. The dry and wet exposures were the same as for the specimens in Table I, and the performance in every case excellent.

The test results cited in the foregoing have been confined to mild and severe damp conditions, and to salt spray exposure. Performance of similar order has been shown under other accelerated corrosion or ageing conditions. These include roof or open weather exposure and behavior on "weatherometer" machines. In one of the latter, the ex-

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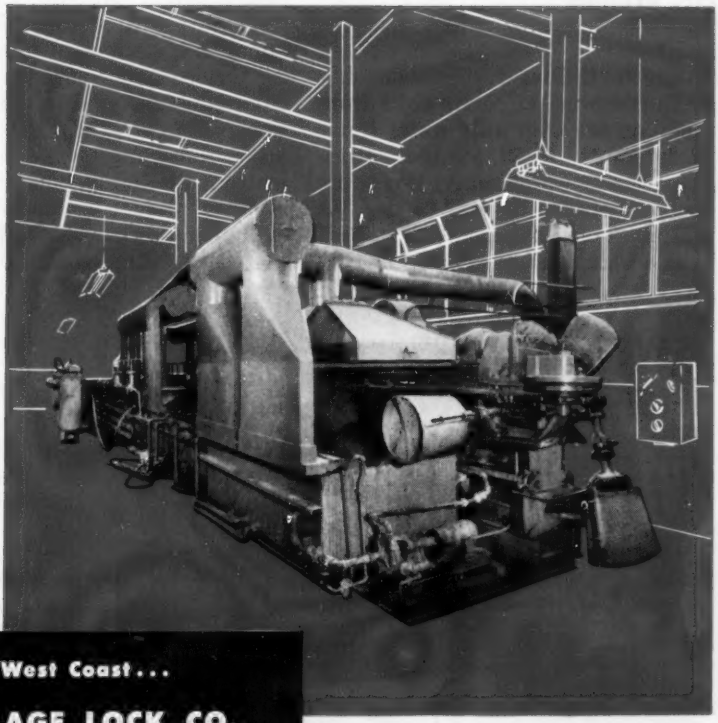

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EVERYTHING FOR METAL FINISHING
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posure conditions during a one-day cycle comprise 17 hours light from a carbon arc with mild water spray at intervals of 20 minutes, three hours heavy water spray, two hours cooling between 32 and 23 deg. F., and two hours for daily inspection.

The industries most interested in pretreatment primers are those concerned with the manufacture of apparatus, equipment or machinery for service under severely corrosive environments or very damp conditions. For practical reasons, they are perhaps most attractive to the instrument and light electrical industries which produce expensive equipment for long periods of service life; the product using all metals in all forms, shapes and sizes. The electronic industry in particular has finishing problems with aluminum and steel cabinets, covers and chassis with spot welded seams that retain chemicals if wet processes are employed. It is concerned with brass and zinc castings, both of which present their own peculiarities in finishing. It also uses many steel panels, zinc plated and chromate passivated or cadmium plated for corrosion resistance. These panels are left bare on one face for electrical contact reasons, but enameled on

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MANPRO B-121 VAPOR DEGREASER

ONE COMPLETE UNIT FOR ALL SMALL PARTS CLEANING! • ABSOLUTELY ELIMINATES FIRE HAZARDS! • OFFERS 50 SECONDS CLEANING CYCLE! • CAPACITY—500 LBS. OF STEEL PER HOUR! • QUICKLY INSTALLED—HAS STANDARD POWER AND WATER CONNECTIONS!

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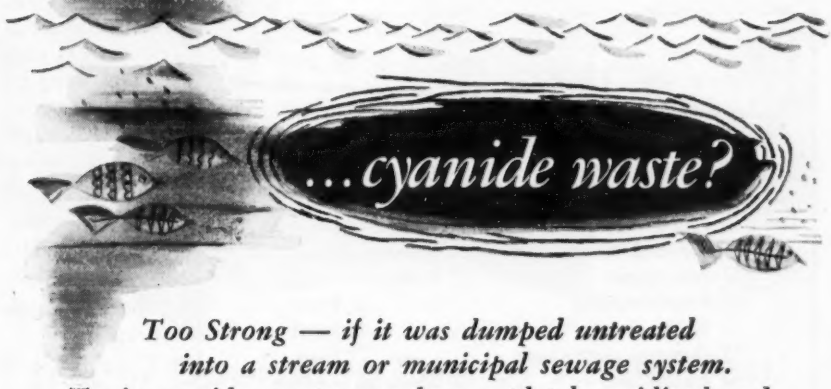
how strong was that last batch of....



Too Strong — if it was dumped untreated into a stream or municipal sewage system. Toxic cyanide wastes can be completely oxidized and destroyed at controlled pH values by the widely used alkaline chlorination process.

Based on the experience of hundreds of installations in the metals treating and finishing industries, Wallace & Tiernan is prepared to help you solve, in conjunction with your Consulting Engineer, any cyanide or chromium waste problem.

Write today for additional data on automatically controlled Alkaline Chlorination and Chromium Reduction Equipment. S-86

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the other face to match the cubicles upon which mounted. Mixed metal assemblies, or those tin plated or silver plated may have to be enameled or partially enameled. The pretreatment primer is the answer to many of these problems.

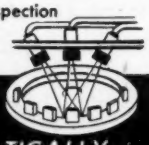
The pretreatment primer does not cause any disturbance to established enameling shop techniques or equipment. Brushing or spraying, air drying or baking, conveyor or box oven methods, synthetic or cellulose media do not require changes to established practices.

The pretreatment primer provides for adhesion and corrosion inhibition. There are many purposes for which, by itself, it is sufficient to provide all that is required for service protection. On the other hand, in most cases it just fulfills the role of primer, and may be reinforced by the finishing enamel only, or primer, surfacer, filler and color coats, in accordance with the full requirements of specific applications.

Finally it is stressed that not only must the pretreatment primer be carefully selected and properly applied, but also the most appropriate top coats must be chosen. This can only be ensured by constant vigilance, laboratory investigation and testing, and regular process control.

which of these FINISHING PROBLEMS are yours?

- ☐ Soldering bond
- ☐ Decorative effects
- ☐ Paint adhesion
- ☐ Plating bond
- ☐ Anodized film adherance
- ☐ Satin finishes
- ☐ Instant wetability
- ☐ Welding bond
- ☐ Phosphate coating bond
- ☐ Brazing bond
- ☐ Preparation for non-destructive testing
- ☐ Lubrication retention
- ☐ Surface activation
- ☐ Stress relief
- ☐ Vinyl coating bond
- ☐ Ceramic coating bond
- ☐ Smoother surfaces
- ☐ Etching
  - ☐ Plastic
  - ☐ Metal
  - ☐ Glass
- ☐ Elimination of galling
- ☐ Reduction of friction
- ☐ Visual inspection



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TWO SPEED WET BLASTING

This ad is your coupon. Check off your problem (s) and mail today for free illustrated literature . . . Application data . . . case history information!

THE CRO-PLATE COMPANY INC.
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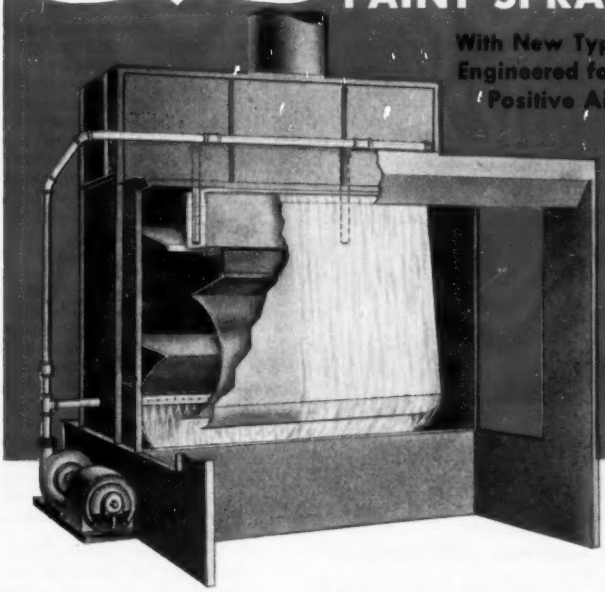
NEW WATER WASH PAINT SPRAY BOOTH

With New Type Baffle Chamber Engineered for 100% Efficiency Positive Air Cleaning Action



Entirely New! The new type baffle chamber provides a positive air cleaning action that prevents paint pigments, moisture and volatiles from reaching the exhaust stack or the outside of a building.

The new air scrubbing chamber features a specially-designed spray header mounted within two curved baffle plates. When water is pumped into the header it sprays forth in three directions from its [illegible] and strikes the baffle plates, building up a violent spray turbulence that removes practically every last particle of paint.

Lower Operating Cost by Actual Test!

NEW **Water curtain supply header** is located *outside* the plenum chamber for easy access. Vertical feeder lines do not interfere with tank adjustments.

NEW **Water Curtain Supply Tank** is completely adjustable. It provides a uniform, non-splashing flow of water that completely covers the curtain and prevents any paint accumulation.

NEW **Bleeder Line Keeps Header Clean** . . . keeps orifices from clogging. The new Bleeder line causes a continuous flow of water from the bottom of the header, preventing the settling of solids in the bottom of the pipe.

NEW **Fast-Action Removable Panels** permit easier maintenance. The entire interior of the booth is accessible in just 3 minutes, by removing just four fast-action clamps per section.

1. Will exhaust air containing not more than 5 grains of solid every 1000 cu. ft. of air handled.*
2. Will exhaust air containing not more than 50 parts per million solvent vapors.*
3. Will reduce down time for cleaning to a very minimum, thus increasing production.
4. Will prevent paint pigments, moisture and volatiles from reaching exhaust stack or outside of building.
5. Will thoroughly eliminate moisture from exhaust air, before it is exhausted.

**Based on spraying rate of approx. 3 gal. per hour per ft. length of booth.*

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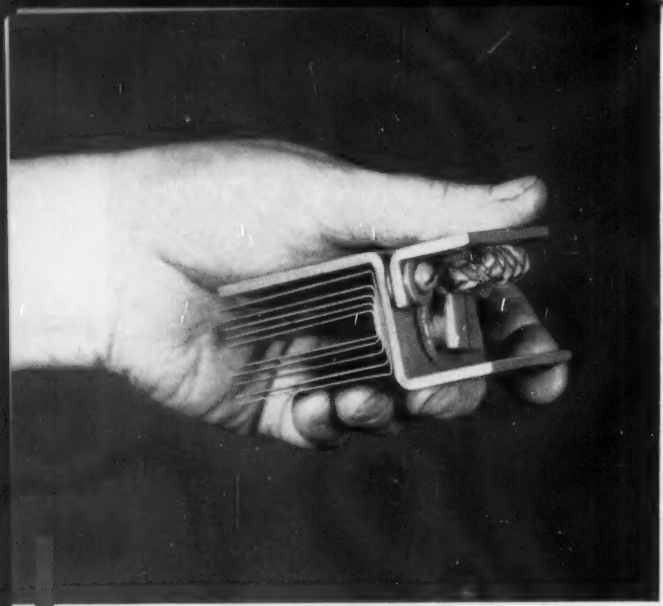

GERMANIUM RECTIFIERS PERFORM WITH TOP EFFICIENCY

Udylite Tests Reveal Amazing Current Conversion Efficiency

This air cooled germanium cell with a rectifying surface the size of a dime will handle a 250 ampere load in a three phase circuit continuously and three years of tests show no detectable power losses. Including heat-radiating fins, it takes up just 8 cubic inches of space and weighs only 12 ounces.

Udylite in cooperation with the General Electric Company, now proudly introduces its new group of germanium rectifiers. Years of research and testing have proven that no other metal known offers the high efficiency of germanium as a rectifier material.

In operations calling for medium to high voltages, such as barrel plating, anodizing or chrome plating the efficiency of germanium soon pays the cost since the efficiency of a 3-phase germanium cell is *98* to *99 percent.*

Even at high loading germanium has less than one-volt drop in the forward direction. As for reverse current, germanium is again particularly good, having a reverse-to-forward resistance ratio of 400,000 to 1. Furthermore, Udylite germanium rectifiers require little maintenance and can be located in areas of minimum ventilation.

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WORLD'S LARGEST PLATING SUPPLIER

NEW BOOKS

Adhesion and Adhesives—Fundamentals and Practices. 229 pages. Edited by F. Clark of the Society of Chemical Industry in London, and John E. Rutzler and Robert Savage, both of the Case Institute of Technology. Published by John Wiley & Sons, Inc., 440 4th Ave., New York 16, N. Y. Price, $9.75.

This book contains a collection of the papers read at two conferences that were held simultaneously at the Case Institue of Technology and in London. At these symposia, the motivating factors were the rapid expansion of high polymers in industrial use, and the increasing appearance on the market of more versatile adhesives for use in structures and protective coatings.

The new book brings together the research material of 53 specialists who met at the conferences. Discussions in theoretical fundamentals cover such topics as joint strength, solid-solid interfaces, fluids, and molecular and inter-molecular forces. In the papers dealing with practice, the authors cover the use of adhesives in glass, paper, wood, roads, films, aircraft, plastics, metals, rubber, and textiles, among other related details.

★ ★ ★

50 Years on Tracks—A commemorative company history of the Caterpillar Tractor Co. Available from Caterpillar Tractor Co. dealers. Price, $1.50.

This book is a series of separate, chronological essays. It features many photographs — most of which were selected from Caterpillar's photo files. Some of them are more than 60 years old and show the huge combined harvesters and steam tractors of the West Coast nineties at work.

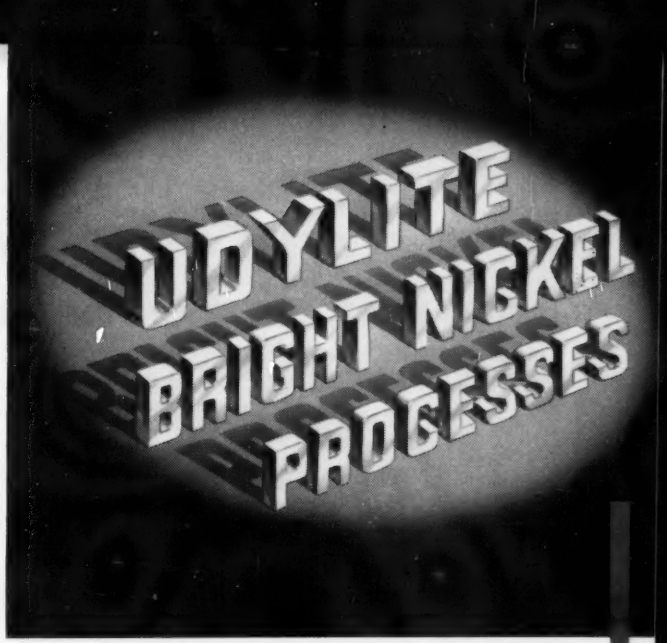
The book starts with these combines and tractors that preceded the first crawler of 1904. Later, each important step of the crawler's evolution is traced photographically.

The reader is also given a broad view of Caterpillar Tractor Co. as it is today. Described are the manufacture of one product, one research-engineering project, one new post-war factory. Similarly, there are stories of one supplier, one domestic dealer, one overseas dealer, one customer, one parts depot, and so on.

★ ★ ★

15 PORTRAITS IN PRINT OF DIAMOND CHEMICALS AND THEIR CONTRIBUTIONS TO EVERY-ONE'S PROGRESS, a brochure depicting the contributions of Diamond Chemicals to America's way of life and standard of living is available from the **Diamond Alkali Co.,** 300 Union Commerce Bldg., Cleveland 14, Ohio.

Interpreted in words and pictures are 15 of the diverse ways in which Diamond is helping to build an increasingly better America through creative chemistry and its many applications in industry.



THE UDYLITE BRIGHT NICKEL PROCESSES

The Result of 20 Years of Research and Consistent Improvement

Exceptional brightness and leveling, with great operational stability and simplicity of control characterize the Udylite Bright Nickel Processes.

Produced by Udylite Research, these patented processes have for years been accepted the world over as the standards for quality plating. All Udylite processes are constantly being improved by the Udylite Research Corporation with its fine facilities and outstanding staff. These three Udylite Bright Nickel processes are most generally in use today.

No. 31 is a high speed process with highly stable brighteners and wetting agent. It is economical to use and exceptionally trouble-free in yielding the most ductile and lowest stressed bright nickel deposits.

No. 31H process is the same as No. 31 except it operates in the high chloride type bath to permit even higher speed plating. It is exceptionally tolerant to zinc and iron impurities.

No. 41 process is used where high leveling and brilliance must be obtained with minimum thickness of nickel. This process has the widest bright plating range of any bright nickel bath down to the very low current density of deeply recessed parts. An exceptional bath for the plating of zinc die-castings.

Udylite welcomes comparison of its processes to all others. Send us a sample of the part to be plated and let us make recommendations. Write to:

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Automatic Application of Drawing Compound Improves Forming and Processing

By Gerard H. Poll, Jr.

ALTHOUGH manufacturers of metal products have long realized the necessity of having the cleanest possible product prior to finishing operations, little emphasis has been placed on cleaning prior to any of the steps preceding the application of a finish. Through a research and development program in cooperation with producers of metal working and finishing equipment, RCA Estate Appliance Dept., Radio Corporation of America, range and heater manufacturer, has found certain advantages in cleaning metal prior to the application of drawing compound. Investigation has also established the fact that drawing and forming operations may be improved by having a thin, uniform coating of drawing compound on the surface of the metal.

To accomplish the cleaning and application of a uniform film of drawing compound, RCA Estate has installed equipment designed specifically for these purposes. And, in line with the continuing trend toward automation, the new machinery is completely automatic, the sheets of steel entering the machine at one end, and emerging from the other end after being cleaned, coated with drawing compound, and dried without being handled manually. Included in the installation are a Peters-Dalton power spray washer which cleans the sheared steel sheets, a Union Tool Company roller coater, which is used to apply the drawing compound and a Peters-Dalton drying oven to dry the film of drawing compound. Thus a thin, uniform coating of drawing compound is assured by virtue of the fact that the surface to which it is applied is clean and the application rollers are under a constant pressure. RCA Estate has found this to be necessary and desirable to give a high quality product and reduce the number of rejects incurred during stamping and drawing operations, while increasing speed and efficiency of the manufacturing process.

Handling is speeded because sheet steel is handled in bundles with an overhead crane. A bundle of steel sheets is delivered to the loading end of the washing machine, where it is lowered to a gravity roller conveyor. It then rolls into position to

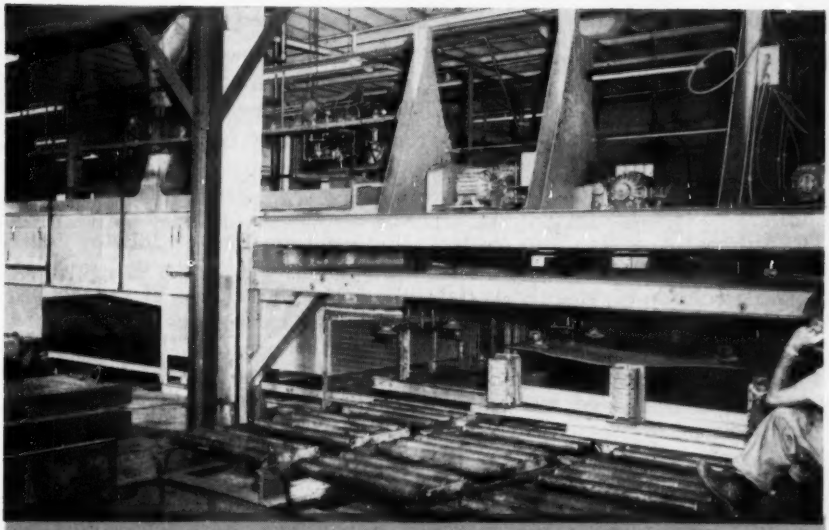
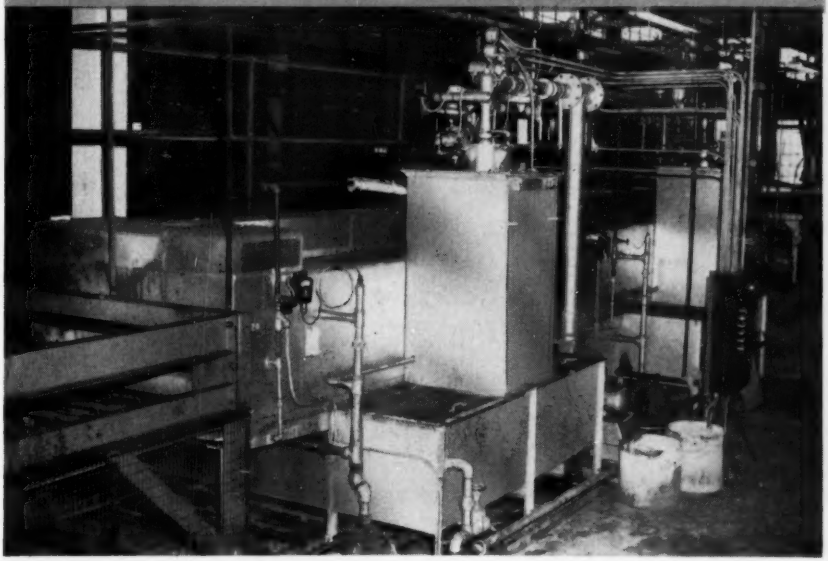


Fig. 1—Suction cup loader is used to pick up each steel sheet from a pallet load and place it upon the washing machine conveyor.

Fig. 2—(Below) View of spray washing machine, showing recirculating tank (center). Automatic loader feeds steel sheets onto endless conveyor of the machine from the left. One of the several Partlow automatic temperature controls can be seen mounted on the side of the washer (left foreground).



be handled by the automatic suction cup loader (Fig. 1).

Processing from this point is as follows:

1. Automatic suction cup loader picks up each sheet and places it upon the continuous steel cross-rod conveyor of the washing machine (Figs. 2 and 3). The conveyor moves at 55-60 feet per minute.
2. Steel is preheated by steam.
3. Steel sheets are spray washed from nozzles above and below the conveyor, with a solution of Pennsalt N-32 held at 180 deg. F.
4. Steam blow-off.
5. Steam blow-off.
6. Hot water rinse, 180 deg. F.
7. Steam blow-off.
8. Sheets are transferred to the roller-coater by power-driven neoprene squeegee rolls, 8 inches in diameter.
9. A Union Tool Company roller coater (Fig. 4) coats the steel with a thin, uniform film of drawing compound, forcing it into the pores of the metal. Thickness of the film is controlled by keeping the pressure on the rolls constant. This operation is carried out at 190-200 deg. F.
10. Film of drawing compound is dried at 550 deg. F. with hot air in a Peters-Dalton forced-dry oven, which is heated with direct gas-fired, vertically mounted heaters.
11. Sheets are transferred from the drying oven conveyor onto the revolving power-driven rolls of an

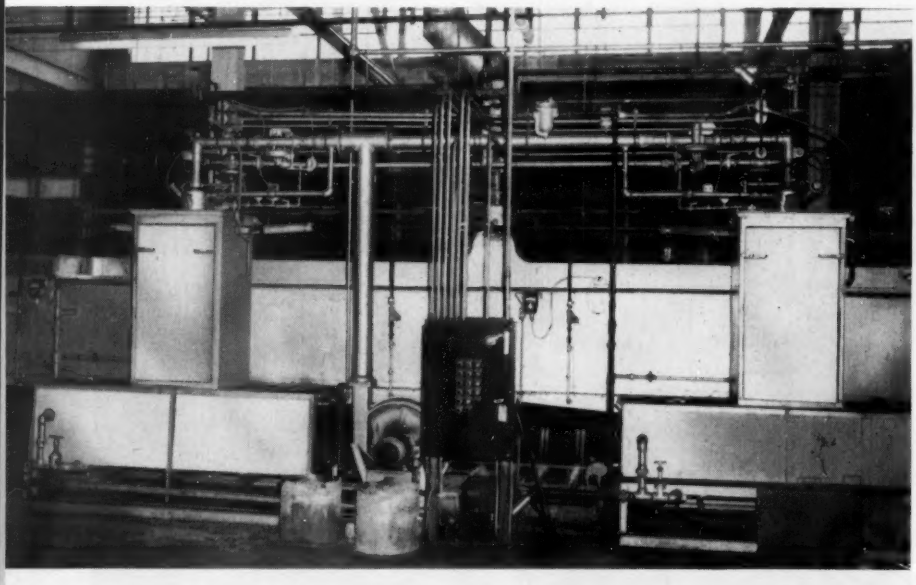


Fig. 3—Side view of Peters-Dalton two-stage washing machine. Control panel is in the center.

automatic stacking device. When each sheet reaches the proper position, these rolls drop 90 degrees, removing the support from the sheet and allowing it to drop onto a pallet. A load of sheets is then picked up by a fork lift truck and moved to the next step in processing.

The steel is then transported to the forming operation, and then to the finishing*, assembly, and packaging sections of the plant, all of which use automatic equipment for much of the processing.

*(An article entitled "Flow Coating of Range and Heater Parts," describing the finishing operations at RCA Estate, was published in the March 1954 issue of PRODUCTS FINISHING.)

★ ★ ★

DIE CASTING. A booklet describing the die casting process and its application is now available from the **American Zinc Institute, Inc.**, 60 East 42nd Street, New York 17, N. Y.

"I guess George will have to sweep every time I spray. The boss is nuts about the unusual finish on this cabinet."

The booklet, entitled "Die Casting—Molten Metal to Finished Part—Direct," discusses this production method as it affects product design, machining requirements and surface finish. Zinc, aluminum, magnesium and copper base die casting alloys are discussed. Also included is a chart which lists for each alloy A.S.T.M. and SAE designations, composition by weight, mechanical properties and other properties.

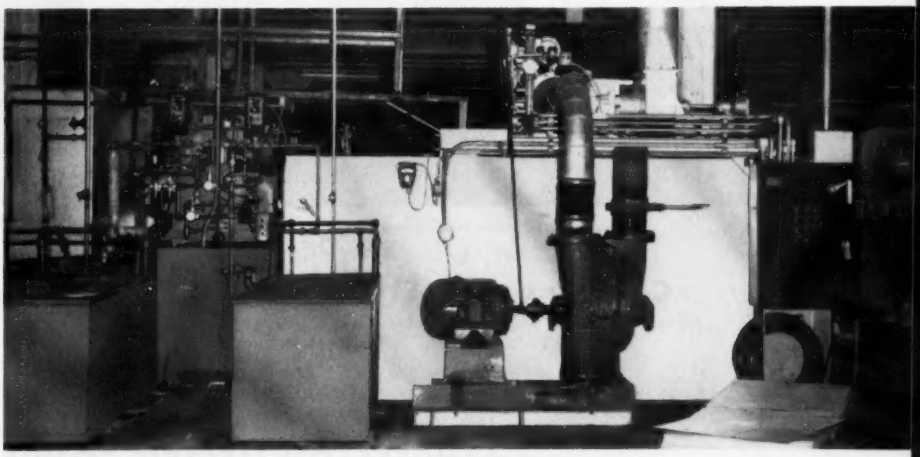


Fig. 4—Roller coater, used to apply drawing compound, is shown on the left. Peters-Dalton forced-dry oven is shown in the center foreground. Automatic unloading mechanism is on the right.
(PRODUCTS FINISHING staff photos)

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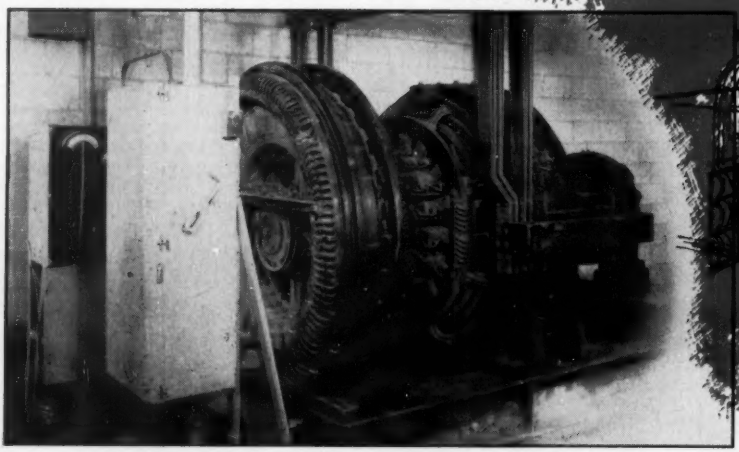

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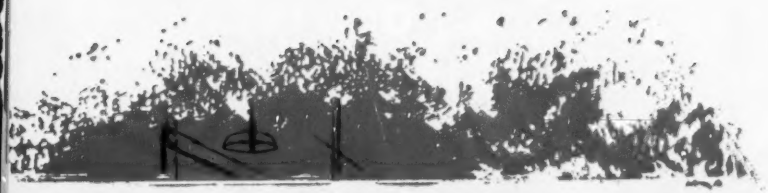
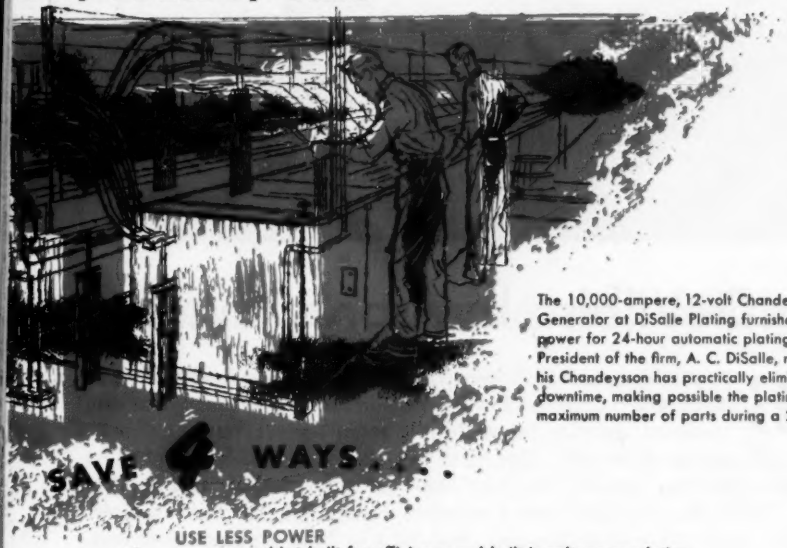


PLATING MACHINE OPERATION

CO., TOLEDO, OHIO



The 10,000-ampere, 12-volt Chandeysson Motor Generator at DiSalle Plating furnishes dependable power for 24-hour automatic plating operation. President of the firm, A. C. DiSalle, reports that his Chandeysson has practically eliminated downtime, making possible the plating of the maximum number of parts during a 24-hour period.

SAVE 4 WAYS . . .

USE LESS POWER
precision-built for efficiency and built-in voltage regulation.

GET MORE OUT OF THE POWER YOU PAY FOR . .
built-in high power factor at no extra cost.

BE SURE OF POWER WHEN YOU NEED IT MOST . .
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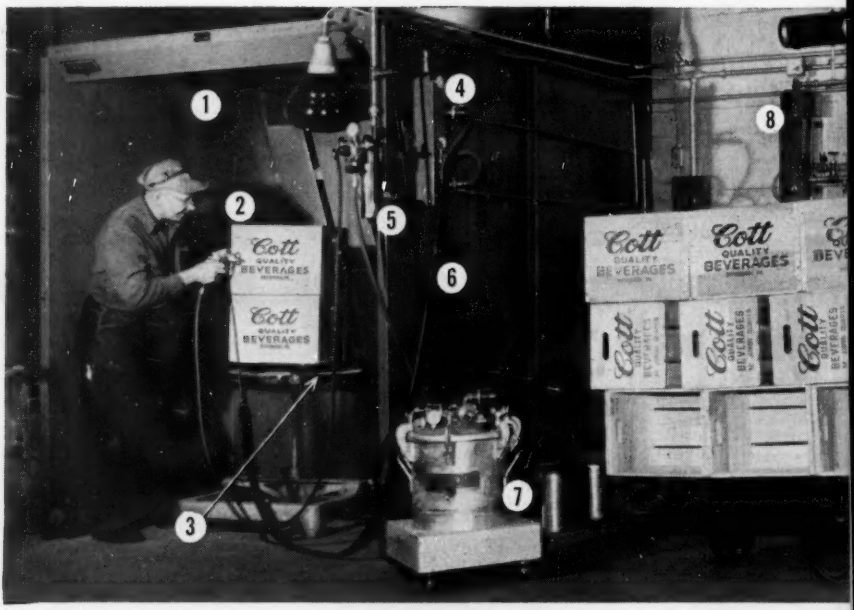


DeVilbiss hot-spray system is

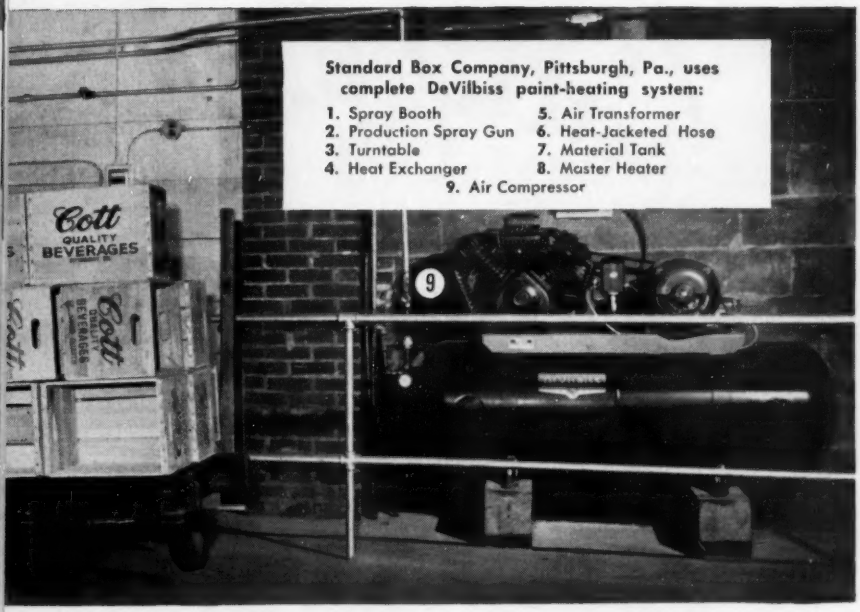
BETTER finishes with fewer coats! Spectacular savings in time and material costs! Lower air and fluid pressures! Uniform material viscosity, regardless of room temperature!

Phenomenal benefits like these can be yours with a DeVilbiss paint-heating system, designed especially for industrial finishing.

Take the Standard Box Company, Pittsburgh, Pa., for example. Box makers for over 38 years, Standard had the problem of providing a protective coating on beverage cases – for longer life, better appearance.

Said Standard's president, Julius Sheps, "We used clear lacquer. For workability, the usual lacquer-thinner ratio of 1 to 4 was required. This meant three or four applications to give adequate protection to our boxes. Extensive thinner usage and multiple coats made costs prohibitive.

"We'd heard of DeVilbiss' new paint heater, and it turned out to be the perfect answer. With the DeVilbiss hot-spray system, we're now getting superior material flow, even spreading, better film build, better drying and a tack-free surface. The lacquer-thinner ratio is



revolutionizing industrial finishing

now reversed, providing four times as much solids per coat, saving on labor as well as thinner costs. We are not just satisfied with the results . . . we are delighted!"

Let a DeVilbiss representative help solve your finishing problems. The standard components of DeVilbiss' paint-heating system can be combined in countless ways to meet your special needs. There is but one source for complete hot-spray equipment, technical skill and responsibility that will improve your finishing operations—DeVilbiss.

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Spotlighting FINISHING Progress

Nickel Plating from Sulfamate Baths

THE operating variables and properties of the deposits of a new nickel plating solution are described by Myron B. Diggin, of Hanson-Van Winkle-Munning Co., in "Metal Progress," 66, 132 (October, 1954). The plating bath is a sulfamate solution containing an organic addition agent designated as SN-1,* the formulation of which is based on naphthalene trisulfonic acid compounds. The following is the composition and operating conditions of the solution:

Nickel sulfamate	40 oz./gal.
Nickel chloride	4 oz./gal.
Boric acid	4 oz./gal.
SN-1	1 oz./gal.
Temperature	75 to 160 deg. F.
Current density	20 to 140 a.s.f.
pH	3.5 to 4.2 electrometric
Agitation	Air from low-pressure blower
Filtration	Continuous

The nickel sulfamate is the major source

*Available commercially from Hanson-Van Winkle-Munning Co., Matawan, New Jersey.

Dr. Seymour Senderoff
Supervisory Chemist,
Electrodeposition Section
National Bureau of Standards

•

A Monthly Digest of Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

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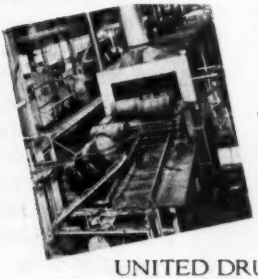

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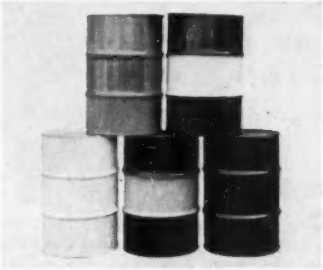

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of nickel ions, the nickel chloride improves anode corrosion, the boric acid acts as a buffer in the cathode film, and the SN-1 increases the hardness, changes the internal stress of the deposit from tensile to compressive, and increases the tensile strength and the electrical resistivity of the nickel plate. It is said to do this without causing brittleness or loss of ductility as is the case with many other organic compounds.

The bath is prepared by dissolving the nickel salts and the boric acid in water, adding 4.75 ml. of hydrogen peroxide for each gallon of solution, and heating the solution to 140 deg. F. The pH is adjusted to about 5.5 by adding a slurry of nickel carbonate. 8.5 grams of activated carbon per gallon of solution is then added, and after standing a few hours, the solution is filtered. The bath is then purified by dummying at 2 to 5 a.s.f. with a corrugated cathode until a uniform gray nickel deposit is obtained. The pH is adjusted to 3.5 to 4.2 by adding sulfamic acid and the SN-1 is finally added.

Effects of temperature, current density, pH, and bath composition on the structure of the deposits were studied. Varying the temperature between 80 and 140 deg. F. in the absence of the

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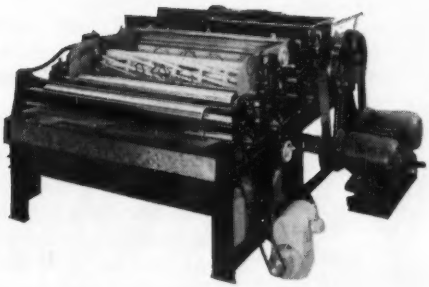

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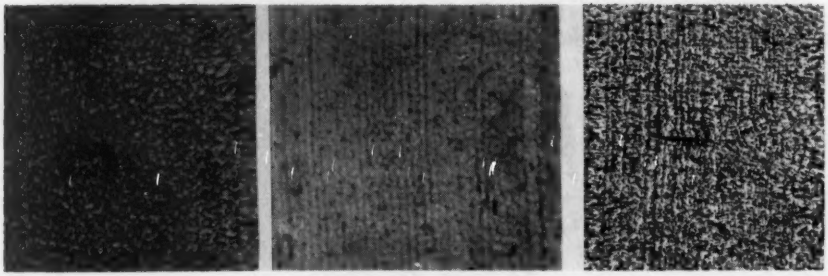


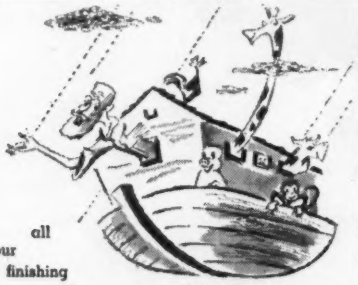
A B C

Fig. 1—Structure of nickel deposits from sulfamate baths containing 28 grams SN-1 per gallon of solution. (A) 20 a.s.f; (B) 80 a.s.f.; (C) 140 a.s.f.

organic addition agent, changed the deposit from a rather coarse-grained structure at the lower temperatures to one with slightly less defined grain at the higher temperatures. In the presence of the addition agent the deposits were fine-grained even at the lowest temperature, and changed to a banded structure at the higher temperatures.

Increasing the current density from 20 to 80 a.s.f., in the absence of the addition agent produces slight grain refinement. In the presence of the addition agent, the fine-grained deposit shown in Fig. 1A is obtained at 20 a.s.f., and the further grain refinement and development of banding as the current density is raised to 80 and 140 a.s.f. are shown in Figs. 1B and 1C respectively.

The effect of pH is similar to that observed in the Watts nickel solution, that is, increasing pH causes



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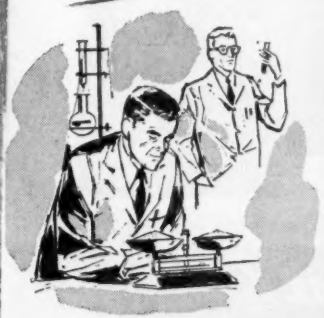

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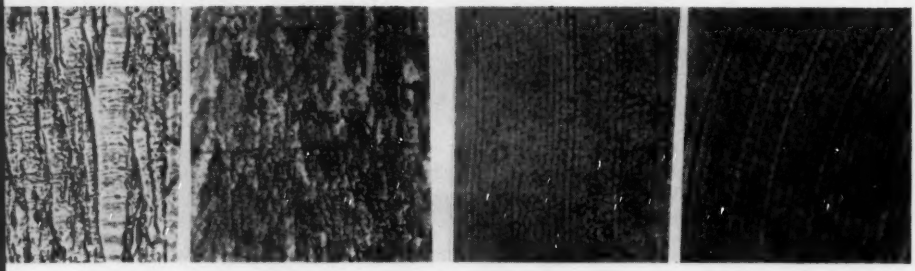

A B C D

Fig. 2—Structure of nickel deposits from sulfamate baths containing various amounts of SN-1. (A) No addition agent; (B) 14 g./gal.; (C) 28 g./gal.; (D) 42 g./gal. The temperature in all cases was 120 deg. F., and the current density 60 amperes per square foot in (A) and (B), and 80 amperes per square foot in (C) and (D).

changes in the stress and hardness of the coating and the formation of a fine-grained structure.

Variation of the total nickel content of the solution between 36 and 44 oz./gal., and minor variations in the chloride and boric acid have little effect on the structure of the deposits, but the author notes considerable effects on varying the concentration of the addition agent. Deposits produced from baths contain-

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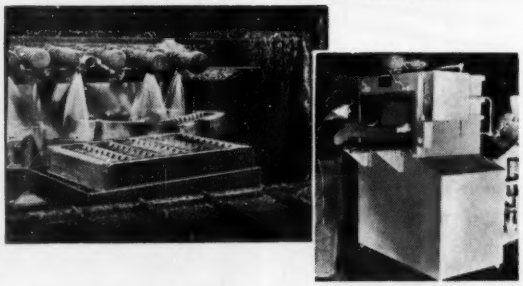

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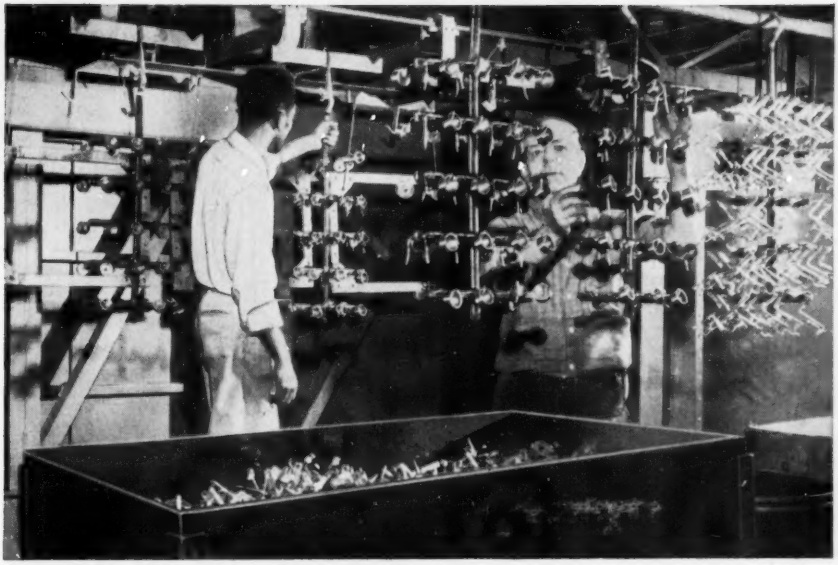

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ing 0, 0.5, 1.0, and 1.5 oz./gal. SN-1 are shown in Fig. 2. The progressive refinement of grain size and development of banding with increasing concentration of addition agent are evident.

Stress, hardness, tensile strength, elongation, and electrical resistivity of deposits produced under various conditions were studied. With reference to stress, particular attention was given to determining those conditions which would yield a deposit with compressive stress. In the absence of the addition agent, the stress in the deposit is always tensile. In the presence of the addition agent, the temperature, the current density, and the pH.

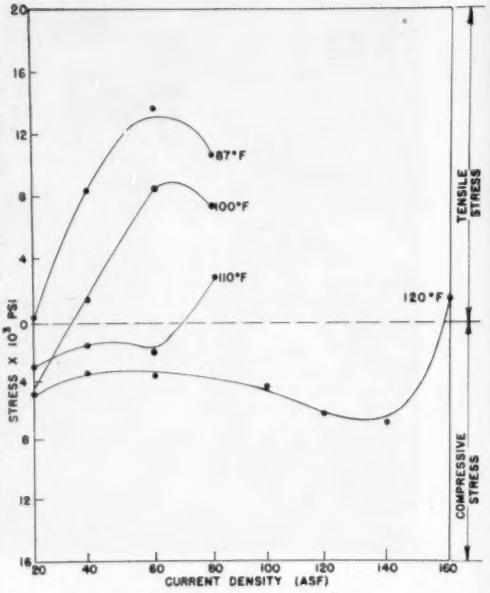

Fig. 3—Effect of current density and temperature of bath on stress in deposits. Bath contained 28 g. SN-1 per gallon of solution.

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Figure 3 shows the effect of temperature and current density on the stress of deposits produced from the standard bath, the formula of which is given above, and Fig. 4 shows the effect of temperature and concentration of addition agent at an arbitrary current density. It can be seen that, in general, higher temperatures and higher concentration of addition agent increase the maximum current density at which deposits with compressive stress can be produced. The effect of pH on stress is similar to that observed in the Watts solution. The stress at pH 3.5 with and without SN-1 is report-

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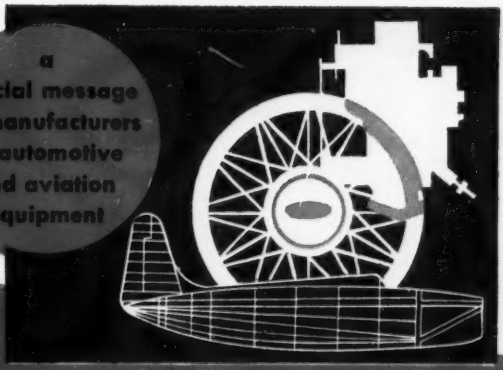

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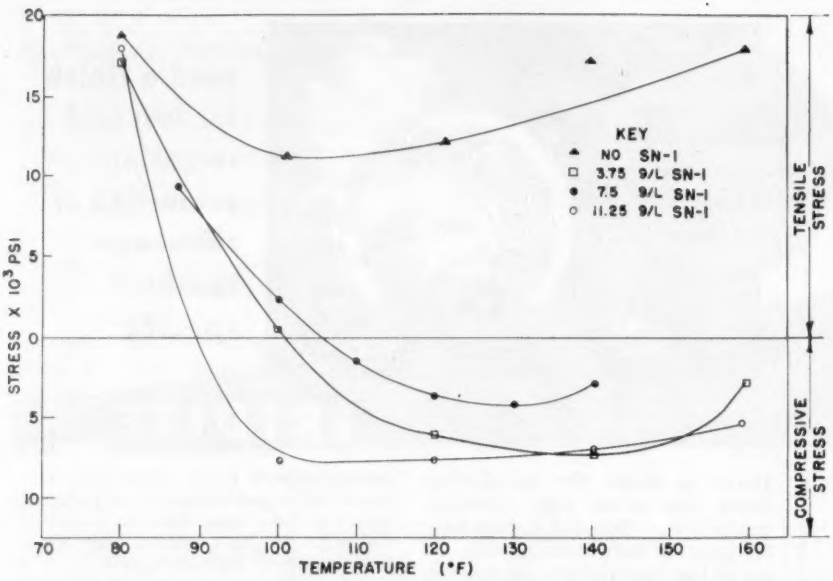

Fig. 4—Effect of temperature on stress in deposits obtained at current densities of 40 a.s.f.

ed to be -7.6 x 10^3 and 12.1 x 10^3 p.s.i. respectively. At pH 5.5 these values were -0.7 x 10^3 and 20.2 x 10^3 p.s.i.

Hardness was found to vary with temperature of operation as shown in Fig. 5. In the standard bath a definite maximum occurs at 120 deg. F. By varying the current density while operating at this temperature, it was found that the hardness increases with increasing current density up to 100 a.s.f. Increasing the pH also increases the hardness. Typical Vickers hardness values for deposits from baths containing the addition agent at pH 3.5 and 5.5 are 574 and 646 respectively. For the bath without addition agent at the same pH values the corresponding hardness

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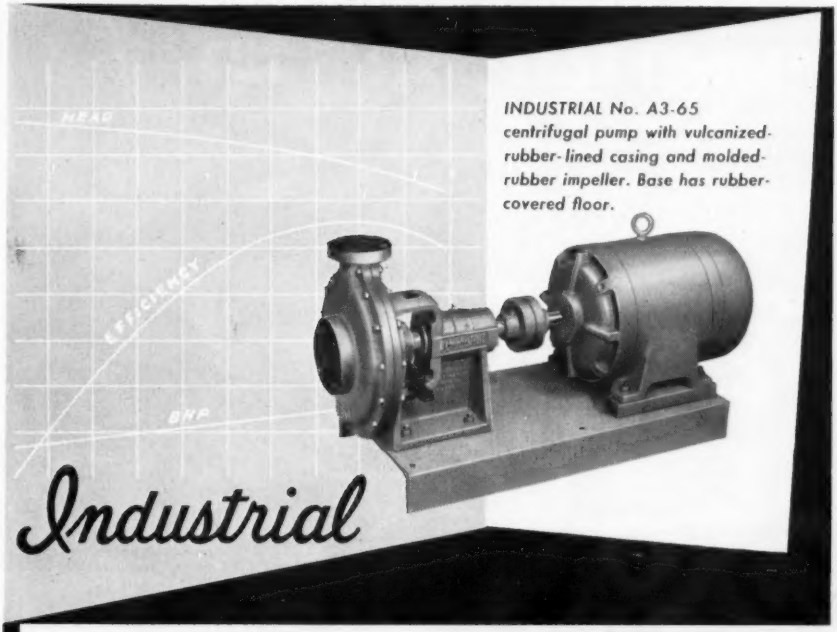

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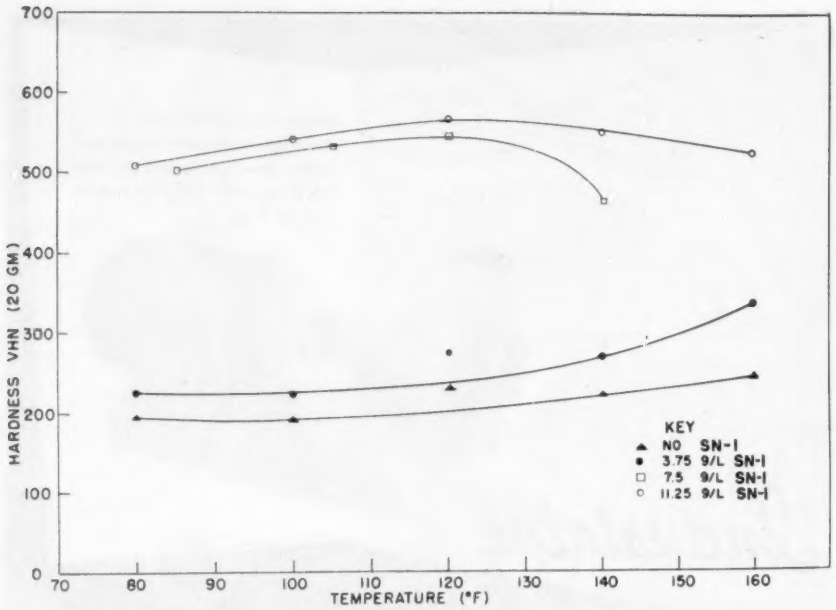

Fig. 5—Effect of temperature on hardness of deposits obtained at 60 a.s.f.

(Illustrations courtesy Hanson-Van Winkle-Munning Co., Matawan, N. J.)

values are 189 and 276.

The effects of temperature and addition agent on tensile strength and elongation of the deposits are shown in Table I. In general a parallel exists between tensile strength and hardness provided the deposits under consideration are sound deposits. A similar, though inverse, parallelism exists between hardness and elongation.

The variation of electrical resistivity of the deposits with the concentration of addition agent is shown in Table II. The author states that in a particular application a nickel deposit with high resistivity was required. The desired value could not be obtained by using SN-1 only, but when the organic addition agent was combined with the cobalt chloride, both together produced a deposit with the desired electrical resistivity.

Nickel plating from sulfamate solutions has been applied in three important fields: (1) resizing of worn or badly machined parts, (2) heavy coatings for various purposes, and (3) electroforming. The author points out that the salvage of tools, crankshafts and Diesel cylinder liners may be accomplished with nickel plating when the deposits approach a hardness of 600 Vickers. It is also stated that the combination of properties, which includes low tensile or compressive stress, and high hardness without being brittle, has resulted in large increases in press runs of printing plates produced by

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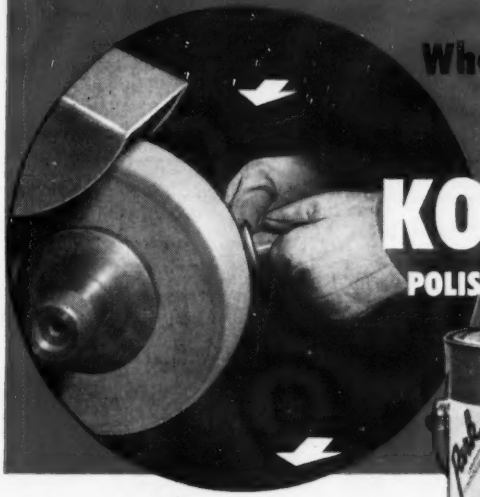

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Table I

EFFECT OF ADDITION AGENT SN-1 ON PROPERTIES OF DEPOSITS

SN-1	Current Density	Temperature	Tensile Strength	Elong. in 2 inches
g./gal.	a.s.f.	deg. F.	lb./sq. in.	Per cent
0	60	85	94,000	5.0
0	60	120	108,000	4.5
0	60	140	98,000	3.25
28	60	120	155,000	—

Table II

RESISTIVITY OF NICKEL SULFAMATE ELECTRODEPOSITS

Additions, g./gal. SN-1	$CoCl_2$	Temperature deg. F.	Resistivity Micro-ohm-cm.	Current Density a.s.f.
0.0	0.0	140	8.6	40
28	—	110	9.9	40
—	7.0	110	9.8	60
42	—	140	10.7	40
28	12	140	16.3	40

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sulfamate nickel plating. Since the deposits may have varying properties, depending upon operating conditions, it is possible to produce parts with an initially soft coating that is surrounded by a hard case by proper adjustment of the operating variables. The low compressive stress is especially desirable on parts that are subjected to high impact in service.

Finally, the stress properties of the deposit are particularly satisfactory for electroforming operations. The author states that the process has been successfully used in the manufacture of record stampers, surface roughness standards, leather embossing dies, and various types of electroformed tubing.

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BULLETIN P-101

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NICKEL-LUME TYPE II—Similar to Type I, but designed for air agitation for highest plating speeds and/or heavy deposits.

NICKEL-LUME BRIGHT BARREL—Similar to above, but designed for use in mechanical plating cylinders. High ductility and activity permit subsequent chromium plating if desired.

9-H COBALT-NICKEL—A time-tested bright nickel process not dependent on organic addition agents for highly brilliant deposits. Properly installed, it is outstandingly stable, producing deposits with good physical properties and unsurpassed protective value.

NICKEL (**Sulfamate**)—A sulfamate salt process for producing heavy, smooth deposits with superb physical properties. Bath developed especially for build-up of nickel deposits of several thousandths and more. Ideal for electroforming and electrotyping operations.

BLACK NICKEL No. 1—A prepared salt mixture for producing a decorative gray-black gunmetal finish.

BLACK NICKEL No. 3—Produces a deep-black decorative finish on copper, brass and nickel-plated steel. Also for obtaining black background on brass or aluminum name plates. Used for immersion black on zinc die-castings or zinc-plated parts.

BBZ-201—For bright zinc plating in barrels. Produces zinc deposits ranging from silvery-bright to a brilliant bluish-white appearance directly from the bath. Bright dipping is optional.

BSZ-300—An economical, high current-density process producing brilliant zinc deposits from still tanks and conveyors. Deposits readily accept conversion coatings.

CADUX HS—Produces brilliant, pure cadmium deposits at high plating rates in still tanks, conveyors and mechanical cylinders. A bath highly stable and tolerant to impurities.

WES-X COPPER—Smooth, brilliant deposits free from co-deposited organic brighteners. Exceptional corrosion protection, good physical properties and marked leveling when periodic reverse current is employed.

SILVER-LUME—The process that has changed long-standing concepts of silver plating. Produces brilliant and mirror-like silver deposits direct from the plating solution, satisfactory in many cases without subsequent buffing.

Bath has exceptional throwing power. Deposits are hard and wear-resistant, with high protective value, and are somewhat more resistant to tarnish than ordinary silver deposits.

S-B ZINC—An all-purpose zinc bath producing satin-bright to full bright deposits (depending upon solution composition and operating conditions). Has remarkable throwing power and high surface activity for subsequent surface conversion coatings.

SUPER-PROTECTO LEAD PLATING—For applying heavy lead deposits at moderately high current densities in still tanks, barrels and automatic equipment. Furnished in the form of a liquid concentrate.

ALBALOY PLATING (**Bright Alloy**)—Ternary alloy deposits (approx. 55% copper, 30% tin and 15% zinc). Deposits are silvery-white and bright, have high tarnish resistance, have excellent corrosion protection properties, are highly reflective (85% of silver), are relatively hard (Rockwell 50C) and are easily soldered. Melting point is approximately 950°F.

Recommended on copper or copper-bearing nonferrous materials. On electrical instrument parts, because of high tarnish resistance, has ease of soldering and corrosion-protective qualities. Non-magnetic and abrasion resistant. Useful at ultra-high frequencies because of combination of properties. Used as a protective and decorative coating on beryllium copper springs.

METAL CLEANING PROCESSES—Alkaline, acid and emulsion cleanser products to meet any metal cleaning requirements. A full selection for soak cleaning, electrocleaning, horizontal barrel cleaning, oblique barrel cleaning, spray washing machine cleaning and for special cleaning applications.

PERIODIC REVERSE CURRENT—H-VW-M is the sole agent for marketing the Periodic Reverse Current Process. Competent technical assistance is available from H-VW-M for applying PR current to metal plating operations.

MANODYZ PROCESS—A process for the anodic treatment of magnesium to produce a corrosion-resisting coating. All alloys can be treated by either the a.c. or d.c. modifications. Coating can subsequently be painted or dyed to various colors.

Complete information on individual H-VW-M processes is available in bulletin form.

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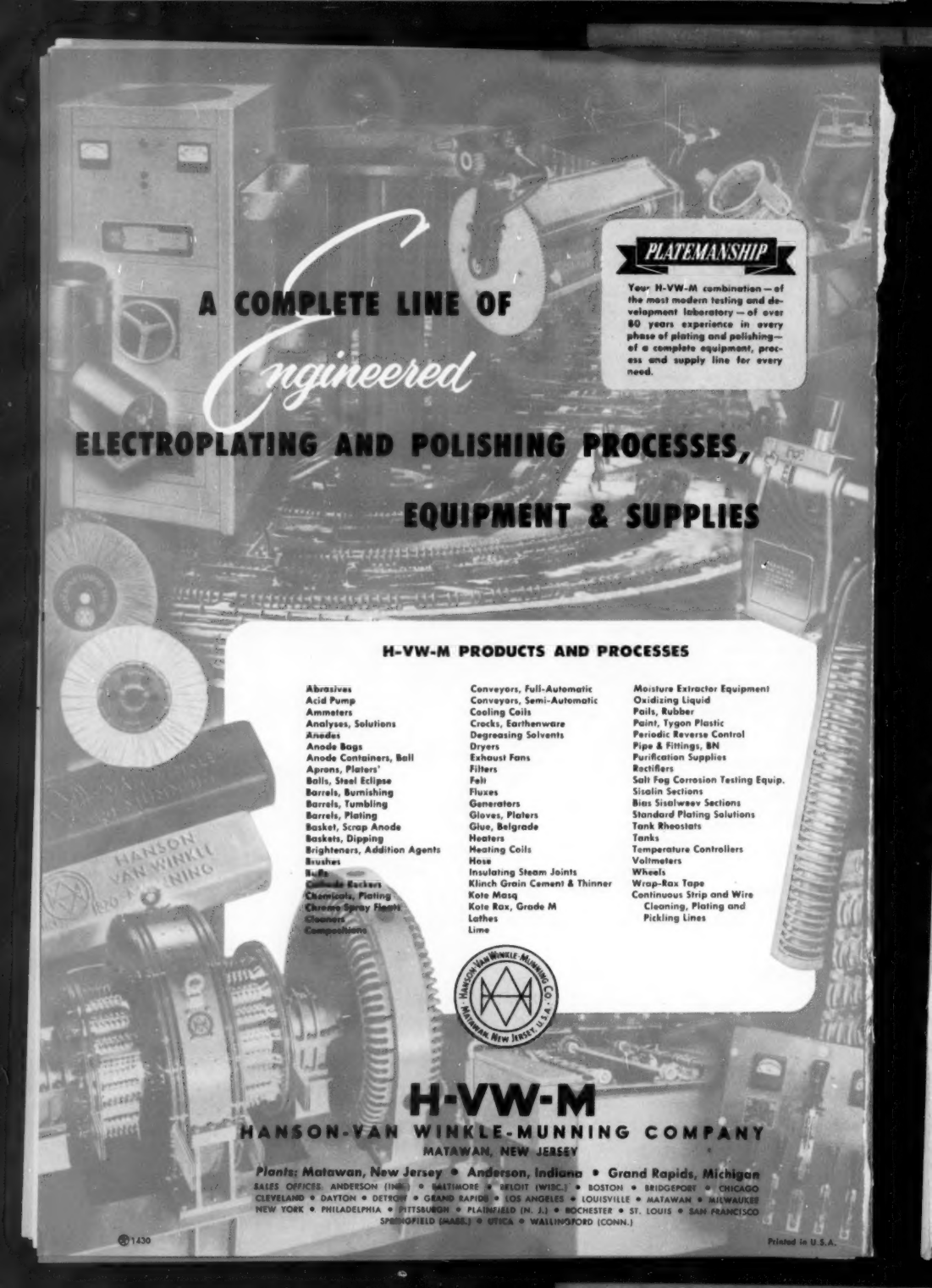

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ANNOUNCING: New VS-3 HONITE Barrel Finishing Machine

More Convenient . . . Easier to Maintain . . . Lower Cost

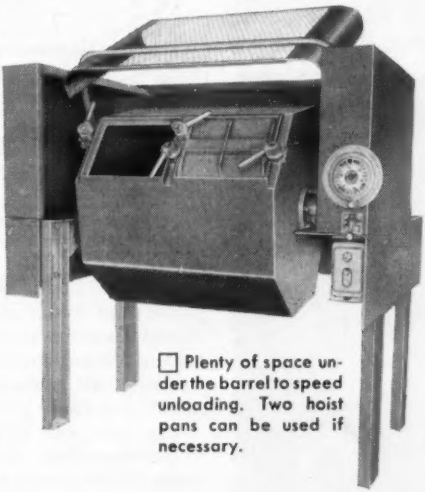
Here's the newest addition to the HONITE line of barrel finishing machines! More convenient . . . easier to maintain . . . lower cost, yet it retains *all* of the same precision construction features of established DV-3 and DV-5 models. It's designed with your needs in mind. It meets the most rigid safety requirements. With the all-new HONITE Barrel Finishing Machine, you have a choice of three motors; the 1½ h.p., for normal applications, the 2 h.p. for all but the heaviest jobs, the rugged 3 h.p. for super heavy-duty requirements. Note that the motor, speed reducer, speed changer and magnetic brake are mounted as a single compact unit, located well away from water and dirt, and completely protected from accidental damage by hoist pans, hoists and swinging objects.

☐ Pivoted safety gate —no slides or rollers to stick or jam.

☐ Cylinder can be removed from the front without disassembly.

☐ Oversize pillow blocks and self-aligning bearings carry full loads of steel burnishing media.

☐ Steel frame absorbs drive stresses without transmitting shock to supports.



☐ Plenty of space under the barrel to speed unloading. Two hoist pans can be used if necessary.

☐ All lubrication points are open and accessible.

☐ Handy height controls, switches and speed changer located at right side of barrel. No stooping — no stretching.

☐ Chain guard covers drive even when safety gate is raised.

☐ Shafts are jig-bored for cylinder mounting to insure alignment on axles within .005".

WANT MORE INFORMATION? Write Minnesota Mining and Mfg. Co., Dept. PF-35, St. Paul 6, Minn., for full details about the new HONITE Barrel Finishing Machine.

Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ont. Export: 99 Park Ave., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Brand Magnetic Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

3M COMPANY

Honite BRAND

Surgical Instrument Manufacturer Installs New Oven to Boost Quality and Efficiency

AN IMPROVED quality of finish has been obtained by a manufacturer of surgical instruments by installing electric duct heaters in the baking oven. Electric heat was chosen because it permits sensitive temperature adjustments to be made by thermostatic control to provide for changing sizes of parts, paint formulas and other specifications.

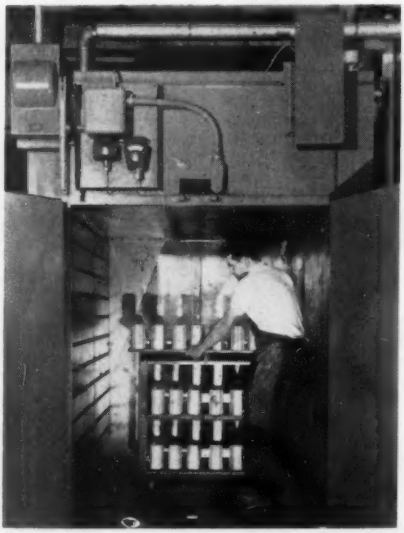


Fig. 1—Small parts for surgical instruments are rolled into oven on a truck. Oven is large enough to accommodate larger parts also. Controls can be seen at upper left.

A flexible oven was needed, because the products being finished come in a variety of sizes and shapes with little volume in any given size.

A small oven had previously been used to bake some parts, but larger pieces had to be air dried. This presented problems in handling and stacking, and a large amount of floor space was required to store parts with different drying times.

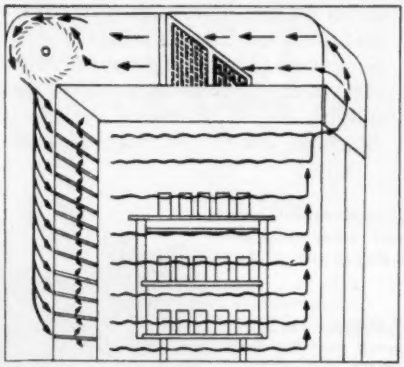


Fig. 2 — Diagram showing how air is circulated through heaters and dispersed into heating chamber to heat all parts evenly.
(Photos courtesy Edward L. Wiegand Co., Pittsburgh, Pa.)

The new oven (Fig. 1) was designed to accommodate both large and small units. Other variable requirements were met by means of flexible heat controls —a thermostat with indicating dial, plus an upper-limit safety control. Two Chromalox electric air blast heaters, rated at 20 KW each, were installed in the air duct of the plenum chamber.

Uniform heat is provided throughout the oven by means of a fan which

circulates air through the finned heaters and down into the lower heating chamber (Fig. 2). Louvers on the side wall direct the hot air so that the contents of the oven are heated evenly. Air is recirculated back through the heaters except when the volatile content reaches a point that makes it necessary to exhaust some of the air through blast gate dampers.

★ ★ ★

Carbide Pins Aid Buffing Operation

THE Dexter Lock Co., Grand Rapids, Mich., uses an automatic buffing machine to polish lock strike plates. In this process, the strike plates are fastened to a rack with small pins which extend slightly beyond the surface of the strike plate (Fig. 1). This rack is then lowered between buffing wheels (Fig. 2). Each rack contains 18 small pins on each side. Since two pins are used to support each plate securely, 9 strike plates can be buffed each time. Each pin is a little longer than a pencil eraser, and 5/32-inch in diameter. The pins are subjected to severe abrasion by the repeated buffing action of the wheels and compound.

Cold rolled and tool steel were formerly used to fabricate these holding pins, but they were worn out at a rapid rate. When this happened, plates were dislodged from the rack, and damage to them often occurred. It was necessary to replace pins frequently, and since the rate of wear was uneven, trouble was still encountered during the operation.

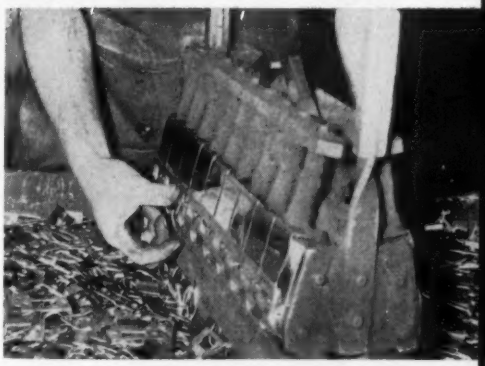


Fig. 1—Brass lock strike plates are being suspended on Carboloy carbide pins on this buffing rack. Note how pins protrude just enough to hold strikes.

Fig. 2—Machine operator is shown suspending buffing rack loaded with lock strike plates in buffing machine. Ends of pins used to hold strikes are subjected to buffing action each time.

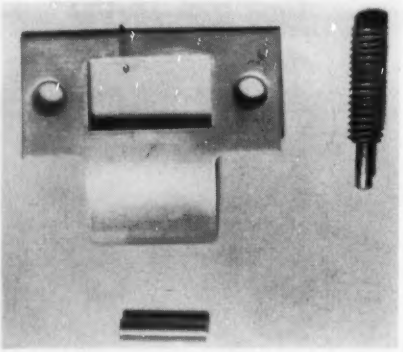


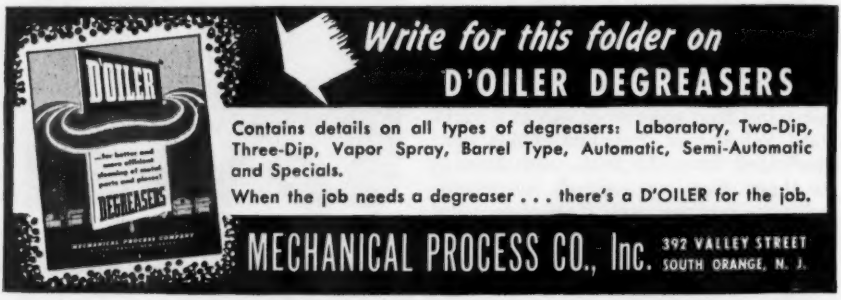
Fig. 3—Brass strike plate (center) is suspended by carbide pins (lower center). Allen-head screws with carbide pins attached (one of which is shown at right) are used to adjust pins in the buffing rack. (Photos courtesy Carboloy Department of General Electric Co., Detroit, Mich.)

Three years ago, the company began using pins made of Carboloy cemented carbide. The application proved successful. The pins, made from grade 833 carbide, are still in use after three years. The rate of wear has been slow enough to enable the company to imbed each pin into an Allen-head screw (Fig. 3). This allows for adjustment of each pin to compensate for the thickness of the plates being buffed.

Mechanically Cleaning Hot Forge Dies

AT THE temperatures and pressures to which they are subjected, hot forging dies soon become covered with a very tenacious coating of carbonized oil and grease. For precision results, the dies must be clean. Moreover, the dies wear rapidly when used dirty. Thus it is necessary and desirable to have a method of cleaning these expensive items efficiently. Since they are often bulky and hard to handle, effective cleaning is a difficult problem. A large metal working plant in New England is now using equipment which solves this problem. Two Magnus Aja-Dip Cleaning Machines have been installed, one for cleaning the dies, the other for rinsing them. A solution of Magnus 61C cleaner is used in the machines for chemical cleaning. The machines provide the mechanical agitation necessary for efficient cleaning.

The concentrated cleaning solution is used at the rate of 2½ ounces per gallon. This solution is heated to 170 deg. F., and the dies are loaded into the machine. Agitation is started. In most cases, the process takes no longer than ½ hour, even for very large dies. In some instances, as in the case of very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This is just one example of superior Pittsburgh construction, engineered for both general and specific applications. For details of the complete line, write for free Catalog No. 54-W. Address: PITTSBURGH PLATE GLASS CO., *Brush Div.*, Dept. V-3, 3221 Frederick Ave., Baltimore 29, Md.

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Cleaning Dies

large dies, only 1 die is cleaned in a cycle.

After cleaning in the first machine, work is rinsed in the second machine, in which Magnus 26 N rust preventive is dissolved at the rate of about 0.3 ounce per gallon. This rinsing solution is held at 180 deg. F. All dies in this plant are being kept clean constantly by this method. The company reports a definite increase in die life and fewer rejects as a result of this method of maintenance.

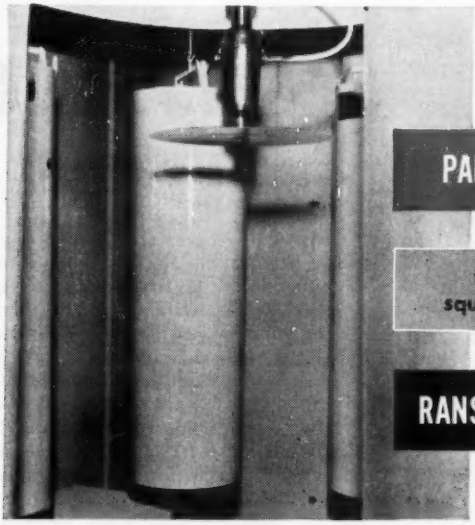
★ ★ ★

SOUND FILMS CATALOG. A catalog providing complete information on Westinghouse sound motion picture films and slide films is available from the **Westinghouse Electric Corp.**, P.O. Box 2099, Pittsburgh 30, Pa.

This film guide covers a variety of subjects, and provides complete film information that will assist in promoting showings to all organized groups.

The film subjects are listed and classified into three groups; general interest, product information and training films and instruction courses.

Order forms are enclosed with each catalog. The sound films, both in color and black and white, are loaned at no charge and are available in 16-mm. size.



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● When General Water Heater Corp., in Burbank, Calif., switched from hand spray to Ransburg No. 2 Process in painting water heater jackets, paint mileage increased almost 65%. Where General formerly got 370 square feet per gallon of paint, they now get over 610 per gallon.

On this installation, units ranging from 20 to 100-gallon size are painted with Ransburg No. 2 Process reciprocating disc atomizer. Changes in jacket sizes can be made without stopping the conveyor. With the reciprocating disc atomizer, change in stroke length is made "on the fly" without shutting down production. General also paints smaller parts, such as heater tops, bottoms, doors and legs, with the Ransburg equipment.

In addition to paint and labor savings, General Water Heater is getting "excellent consistency" and a high quality finish on their products. Another on-the-job-example of the unmatched efficiencies of the Ransburg No. 2 Process of electrostatic spray painting!

Ransburg maintains complete laboratory facilities for test-painting YOUR products under simulated production conditions. Why not let us show you what Ransburg Electrostatic Processes can do for you in YOUR finishing department. No obligation.

Ransburg **ELECTRO-COATING CORP.**

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For further information about Electrostatic Painting Processes and complete Ransburg services, write Dept. P.

FINISHING

Question: *We are copper plating steel in a potassium cyanide copper plating solution. The deposit is hard and difficult to buff. Can you advise how to overcome the trouble?* *A.C.*

Answer: Three methods of obtaining softer deposits from a cyanide copper solution are: plating at a lower current density, raising the solution temperature, and increasing the amount of free cyanide in the solution.

If this solution has been in use for a long time, it is quite possible that the carbonate content has increased to a point that it is causing difficulty. Carbonate can be removed by chemical means or by permitting the solution to freeze during cold winter weather. A great deal of the carbonate will settle out in the bottom of the tank so that the clear solution can be removed for further use.

fc

Question: *In going over your September issue, I find that we have a problem very similar to A.D.S. in your "Finishing Clinic."*

We would like to polish for satin finish in the sheet or strip, spray with a protective coating, pierce and blank, form and remove coating before plating. This would eliminate or at least reduce our polishing costs.

Answer: A material designed specifically to accomplish the purpose you have in mind is manufactured and supplied by a number of companies and is called a strippable plastic coating. This material may be spray applied and dried in the air quickly to a tough film so that metal may be formed without scratching. After the completion of forming operations the strippable coating may be removed by hand.

fc

Question: *We are enclosing a sample piece of Part 227077 on which we have a cleaning problem.*

The part is made from Monel metal and is silver brazed by induction heating in assembly. To prevent the silver solder from flowing onto the mesh, we paint a fine line strip of shellac around the circumference of the mesh cylinder at each end, as per sketch enclosed. The heat of induction brazing bakes the shellac which must be removed by a final cleaning operation.

Since this is a precision aircraft part, it must be entirely free from any foreign materials. Can you suggest a product or cleaning material which will accomplish this? *C. P. H.*

Answer: Since your problem involves the removal of baked shellac, it presents a rather severe cleaning operation and ordinary methods will probably not be satisfactory. Therefore, it is our suggestion that the problem be pre-

CLINIC

sented to some of the companies who are specialists in this particular field. We are forwarding their names.

fc

Question: *In PRODUCTS FINISHING, issue of February 1953, page 57, your "Finishing Clinic" refers to the three methods for coloring aluminum. I would appreciate your referring me to the companies marketing products for such processes.*

If there are other means or processes, simple in nature, for the coloring of aluminum and aluminum alloys, I would like to hear from you on those as well.
G. J.

Answer: The three processes for coloring aluminum were outlined in the "Finishing Clinic" article. The first process, used perhaps more generally than any other, consists of anodizing aluminum in sulfuric acid, dipping the anodized parts in various dye solutions and then sealing the colored product to make it permanent. We are forwarding you sources of information on this process.

A process for treating the surface of aluminum and coloring the surface in the same operation has been developed and we are advising you of a source of information regarding that process.

Aluminum may also be colored by treating the surface in a chromate solution or by a phosphate process after which the surface is sprayed with lacquer available in a wide variety of colors. We are providing you with information on sources of such processes. These are the principal processes for coloring aluminum.

fc

Question: *In the January issue of PRODUCTS FINISHING, you refer to a "vapor drain chamber."*

Since we do much dip coating of slide fastener components and have our share of difficulties with it, we are greatly interested in any new developments in this field. Could you please refer us to any source of published information describing such an arrangement and its operating characteristics?
H. B.

Answer: The vapor drain chamber is a necessary component of all flow coating installations. Its operation is described in the article, "Flow Coating Range and Heater Parts," published in the March, 1954 issue of PRODUCTS FINISHING.

The same principle, namely, that of suspending a dip coated piece of work in a vapor saturated atmosphere has been used in small installations to improve the quality of the product. It would seem to adapt itself in an ideal manner to use in a conveyorized dipping setup since it was originally designed to be used in that way in connection with flow coating.

DO YOU HAVE A FINISHING PROBLEM?

The editorial staff of PRODUCTS FINISHING is prepared to aid you in the solution of your problem.
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new *Rotary* spray painting unit finishes flatware at 100 ft./min.

This new automatic rotary spray painting machine has three major advantages over previous automatic equipment: (1) It applies uniform coatings at extremely high conveyor speeds. Outstanding results have been obtained with the conveyor running as fast as 100 feet per minute. (2) Close synchronization of the rotating speed to the conveyor speed is made possible with the precise built-in variable speed drive. (3) Maintenance is greatly reduced. There are fewer moving parts in the new rotary machine and they travel continuously in one direction at low speeds, reducing vibration, wear.

OVERSPRAY REDUCED TO MINIMUM

The spray guns operate only when they are directly over the product. Each turns on automatically when it reaches the edge of the product and shuts off as it leaves. The length of time the guns are in operation can be changed while the machine is operating.

OTHER SPECIAL AUTOMATIC UNITS

In addition to the Rotary Unit, Binks offers the Automatic Reciprocating Machine and the Automatic Spindle Machine. Virtually any product can be finished automatically with one of these three machines.

FOR FURTHER INFORMATION

If you are interested in automatic finishing, Binks will gladly analyze your operation and make a specific recommendation. There is absolutely no obligation. Just write to the address below:

Binks
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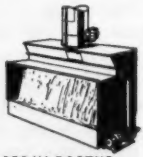
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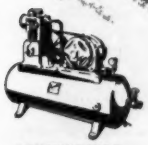

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Faster flow of finished castings, reduced handling costs, finishes that resist modern high-speed coolants—*these* are the demands of today's production. Lowe Brothers "Finishing Specialists" have once more demonstrated their leadership by developing **VINOC,** a finishing system which meets every modern requirement, yet maintains the highest standards of beauty and wearability which made the Lowe Brothers name great!

EXTRA—The new filler in the VINOC system glazes with unprecedented ease, speed and smoothness with knife or squeegee!

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IMPROVED RESISTANCE TO MODERN HIGH-SPEED COOLANTS! Lowe Brothers **VINOC** finishes have proved impervious to all modern coolants to which they have been subjected—to keep in stride with today's requirements of streamlined production techniques!

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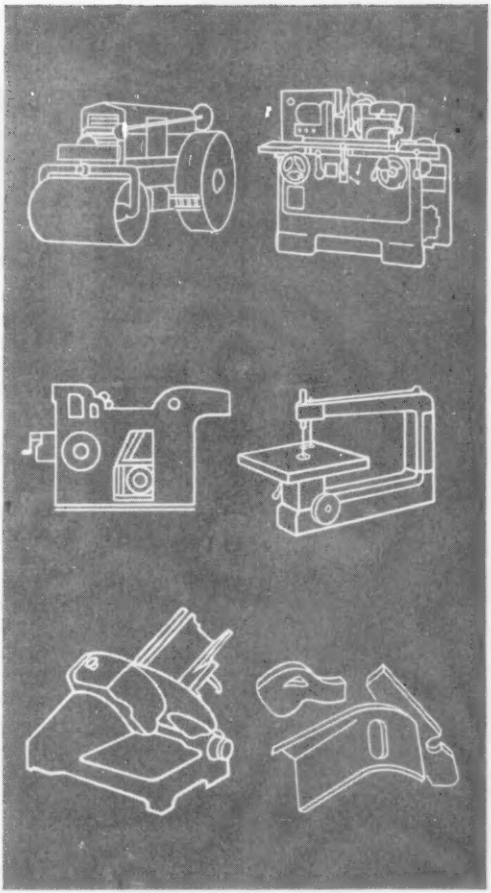
FASTER DRYING! Lowe Brothers **VINOC** system reduces drying time to a new low—speeds handling. Materials dry free of "pinholing"—as a result there's no re-working necessary!

IMPROVED RESISTANCE TO IMPACT AND COMPRESSION! Large castings take plenty of shocks and scuffs during plant handling operations. Lowe Brothers **VINOC** finishes are made tougher to resist this rough treatment and thereby reduce need for patch work.



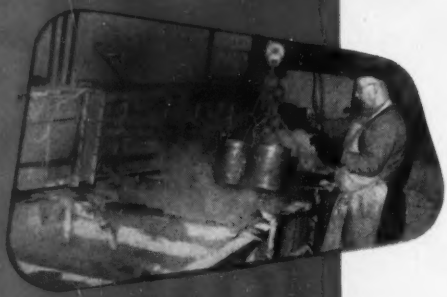
Lowe Brothers new **VINOC** finishing system is available for either cold or hot lacquer application. Get full details now—see how you can save time and cost while getting finest finishing results with Lowe Brothers' up-to-the-minute answer to the most modern production needs—**VINOC!** Write today for prompt service without obligation.

LOWE Brothers

FINISHES FOR INDUSTRY SINCE 1870

The Lowe Brothers Company • Dayton 2, Ohio
Industrial Division
District Offices: Atlanta • Boston • Dallas
Chicago • Jersey City • Kansas City

POLISHING



CLEANING

PLATING

FINISHING

New • EQUIPMENT • MATERIALS • PROCESSES

Chemical-Resistant Paint

Thick-Coat, a resin coating product for protecting surfaces from corrosion has been developed by the Corrosion Engineering Department of the Pennsylvania Salt Manufacturing Company.

Used with Pennsalt high bond strength primers to help ensure adhesion, the Thick-Coat system provides a protective coating for new or corroded metal, concrete and wood equipment and structures or surfaces exposed to fumes, corrosive chemical laden atmospheres or spillage of corrosive chemicals.

Thick-Coat has excellent flow qualities and is applied by brush, roller or spray as it comes from the can. Containing over 60 per cent solids by weight, Thick-Coat helps to assure protection of edges, prominences and crevices as well as plain surfaces.

Complete information is available from the Corrosion Engineering Products Department, Pennsylvania Salt Manufacturing Company, 964 Widener Building, Philadelphia 7, Pa., or by circling No. 1 on Card inside cover.

★ ★ ★

Washing Machine

A machine that washes steel chassis frames has been installed at the Red Lion Plant of the Budd Company, Philadelphia, manufacturers of railroad cars, automobile bodies, chasses and other metal products. Designed and constructed by the Industrial

Washing Machine Corp., Matawan, N. J., the new machine is one of the largest the company has ever made.

Because of the size of the material to be processed, the machine had to be of massive proportions. It is 60 feet long, 24 feet wide and 13 feet high. The conveyor width is 18 feet across with a working height of 18 inches, and the top of the machine is roof-shaped to provide greater strength in supporting the top baffles and top spray systems. The work to be processed is put on four strands of conveyor chain, which returns inside the machine.

Heated by steam, the new machine washes, rinses and dries 800 units per hour.

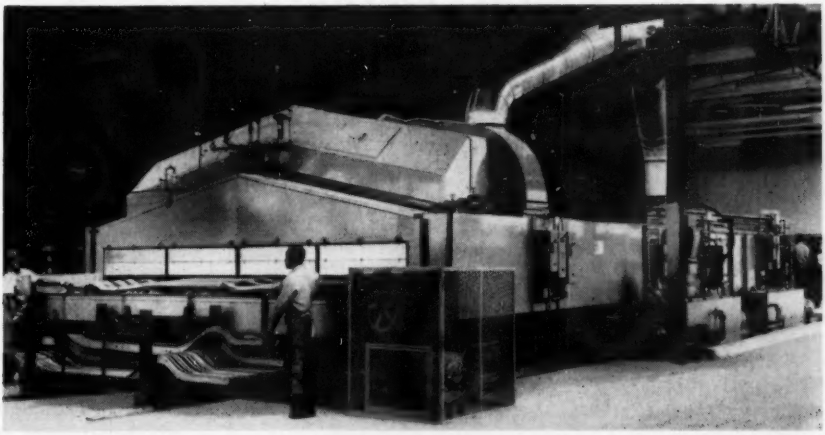
For further data circle No. 2 on Reader Service Card inside back cover.

Stabilized Solvent

Stabilized "Vythene" Safety Solvent has been announced by Tect, Inc., Dumont, N. J. It is a non-flammable, fast evaporating solvent suitable for a variety of industrial purposes, such as plant maintenance and metal cleaning.

Chemically, Vythene is stabilized 1,1,1 trichloroethane. It may be refluxed in the presence of such metals as aluminum, brass, and copper without chemical breakdown, and is non-corrosive to all metals, it is claimed. The solvent is a clear, colorless liquid with a pleasant odor and a low percentage of non-volatile materials.

For further data circle No. 3 on Reader Service Card inside back cover.



New chassis frame washing machine installed at the Red Lion Plant of the Budd Company by the Industrial Washing Machine Co.

Pickling Inhibitors

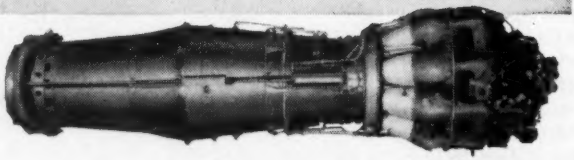
Two pickling aids and an improved version of an established heavy duty inhibitor have been announced by E. F. Houghton & Co., Philadelphia, Pa.

Acitrol 3129, a non-foaming heavy duty inhibitor, has been made effective over a wider range of conditions. The polar activity feature of Acitrol 3129 assists in speed and efficiency of pickling, even at temperatures in excess of 180 deg. F. This inhibitor needs no premixing, offers high stability, and maintains its effectiveness over extended periods of use or storage, it is claimed.

Acitrol 3130 is a foam producing pickling inhibitor which produces clean, smut-free surfaces, and is especially useful where bright work is desired. The high wetting power and detergency of Acitrol 3130, coupled with its foaming action, increases pickling speed and minimizes drag-out losses. This inhibitor is effective at relatively low temperatures, thus guarding against the possibility of metal attack.

Acitrol Foam 25 is a cationic foam-producing chemical which can be used in any desired concentration to provide foaming action. It produces a dense, continuous layer of foam, which is free of sludge-like contaminants, the manufacturer states. Acid penetration into scale layer and speed of rinsing are improved by the wetting action of this material. Like the other inhibitors described above, this one is also resistant to breakdown at elevated tempera-

Sicon Protects
HEAT RESISTANT FINISH



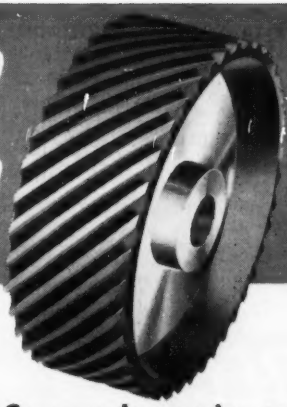
Small Parts For After-Burners
OF PRATT & WHITNEY AIRCRAFT
J48 TURBO JET ENGINE

No better proof of Sicon's remarkable film properties and color retention can be shown than this—its ability to protect jet engine parts under punishing high heat! Sicon is easy to apply by brush, spray, or dip to any chemically clean surface. For protection in the 1000°F. range, or for colorful whites, beiges, golds, greens, etc., in the 550°F. range—SICON *is* unbeatable.

Write today, without obligation, for revealing details of notable SICON applications on both industrial and consumer products.

MIDLAND Industrial Finishes Co.
EAST WATER ST., WAUKEGAN, ILLINOIS
ENAMELS • SYNTHETICS • LACQUERS • VARNISHES

CUTS COSTS like Magic!



Chicago Rubber Company's amazing new R54 contact wheel cuts better—faster—longer and will substantially reduce your grinding and polishing costs 3 ways.

This precision machined and accurately balanced wheel is easily and quickly knocked down and reassembled for tire replacement or change.

- Replace only the rubber tire when necessary instead of the entire wheel.
- Choose from a complete assortment of tire treads for different grinding operations, still using the same wheel.
- And as usual Chicago Rubber Company's R54 contact wheel allows you to get the most wear from your abrasive belt—more than you ever got before.

There is a replaceable rubber tire with proper tread for every grinding requirement and in a wide variety of durometer ratings. Write for descriptive literature.

"IT'S THE WHEEL THAT DOES THE WORK"

CHICAGO RUBBER COMPANY, INC.

Main Office & Factory
2620 N. Clybourn Ave. Chicago
Makers of the COSMOWHEEL

tures. For further data circle No. 4 on Reader Service Card inside cover.

★ ★ ★

Copper Cyanide

Copper Pigment and Chemical Works has announced the beginning of the production of commercial quantities of copper cyanide, an important plating chemical.

The copper cyanide produced by Copper Pigment and Chemical Works is a white powder, which, the manufacturer states, has high purity and high solubility. For further information, write Copper Pigment and Chemical Works, 215 Bayway, Elizabeth, N. J., or circle No. 5 on Reader Service Card inside back cover.

★ ★ ★

Periodic Reverse Unit

The Placo Periodic Reverse Unit has been introduced by Metal Finishing Mfg. Corp. It is designed to give a bright, smooth surface, less porosity and better metal distribution.

Constructed for heavy - duty performance, the Placo Periodic Reverse Unit features immediate current buildup, dependable rapid switching, and simple plug-in connection for installation to 110 volt, 50/60 cycle line.

The unit's uniform cycling is self - contained with starting switches and overload controls. An electronic switch permits the use of a tank for direct current flow in normal plating. Fluctuations due to external conditions are cut to a minimum, and the cycle is adjustable to emphasize any of the

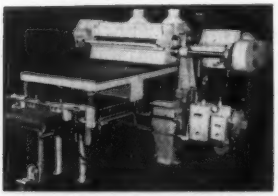
VERSATILE!

It Floats On Air!

The buffs literally ride on air . . . . . insuring uniform buffing pressures at any predetermined degree over flat or curved surfaces!

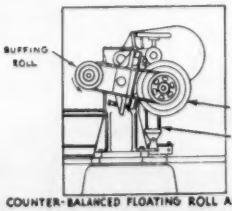
CLAIR SURFACE FINISHING MACHINES

Development of these Clair surface finishing machines is the answer to "demand-performances" from manufacturer's surface finishing departments for precision finishing machines of thorough capability and astonishing versatility.



MODEL 203 This design has anticipated the need for holding the work, with vacuum, regardless of size for surface finishing over the entire area without selvage.

Horizontal Design offers - - -
★ Waist high loading - - less operator fatigue!
★ Better Visibility!
★ Rolls can be changed in two minutes!
★ Easier to exhaust and keep clean!

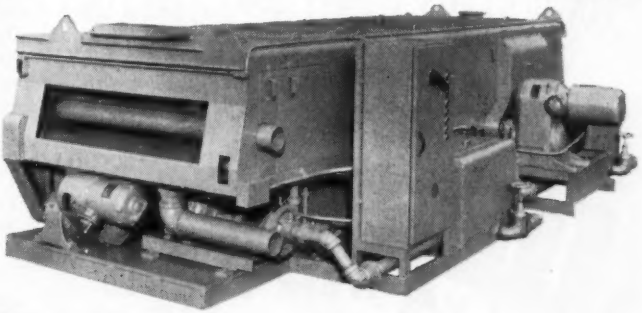


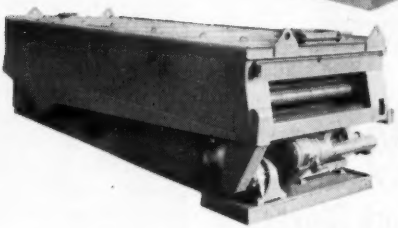
COUNTER-BALANCED FLOATING ROLL ASSEMBLY

CLAIR MANUFACTURING CO., Inc., OLEAN, N.Y.

Offering the Most VERSATILE Line of Surface Finishing Machines

Compact Design "kills" Space-Wasting Bulk





Power Spray Sheet Washers Compactly Designed By P-D To Speedily Wash Sheet Steel After Polishing

Here is a floor-space saving Sheet Washer, built to wash sheet steel after polishing. A comparative "shorty" in length, it handles sheets at high speeds—operating efficiently at a 75 foot per minute gait. P-D equips this Power Spray Sheet Washer with a powered roller conveyor, a powered brush, and a high pressure blow-off. Its compactness saves many important square feet of plant space.

Whatever your problems are for washing products during your manufacturing processes, count on PETERS-DALTON for the correct solution. For more than a quarter century P-D experts have proved their designing and engineering skill. Washers of all sizes, types, and required uses can be developed to meet your needs—whether from a single unit or to a complete installation—depend on P-D to give the services and production you have the right to expect. Just Write, Wire or Phone.

Ask for our new Power Spray Washer Tech. Bulletin No. 301

Peters-Dalton INC.
17908 Ryan Road
DETROIT 12, MICHIGAN

- *Hydro-Whirl Paint Spray Booths*
- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
- *Hydro-Whirl Dust Collecting Systems*

features of periodic reverse plating.

Additional information can be obtained by writing to Metal Finishing Mfg. Corp., 89 North 11th St., Brooklyn 11, N. Y., or by circling No. 6 on Reader Service Card inside back cover.

★ ★ ★

Orbital Sander

Development of an orbital-type air sander has been announced by the Pneumatic Division of the Sundstrand Machine Tool Co.

The orbital sander is equipped with a built-in water attachment for wet sanding, which enables manufacturers, refinishing shops and others to remove material more rapidly. The speed of operation (up to 6000 cycles per minute) makes the sander ideal for rough sanding and preliminary operations by providing quick, economical "make-ready" for finer finishing where needed. Air consumption is low, requiring only 4½ to 7 cubic feet per minute.

The small, compact unit (weight, only 4½ lbs.), is precision constructed with counter balancing of all operating parts to minimize vibration and reduce fatigue.

By eliminating side sway, the sander can be used next to edges, moldings and in tight corners without damaging the work. Ease of operation is assured by the palm lever control on top of the unit, which operates both air and water by a slight downward pressure. Quick change pad clips and anti-friction

Over 47
SQUARE INCHES
Seam-Free
Work Surface
on New PIONEER
Stanflex
Plastic-Coated Work Gloves
Custom-fit, single seam lining (pat. pend.) — no seams on face of fingers, thumb, palm to chafe hands, wear out first. Elastic-knit jersey shapes to hand.
Wing-style thumb, curved fingers fit naturally, complete action freedom.
Tough bonded-vinyl coating won't peel or crack, always flexible, has amazing resistance to cuts, snags, abrasion — outwears leather. Satin-finish gives positive over-all grip. Watertight, resists oils, acids, caustics, most chemicals.
PIONEER Stanflex plastic-coated work gloves available in knit wrist, gauntlet, band top styles. Write today for complete information.
The PIONEER Rubber Company
285 Tiffin Road • Willard, Ohio
PIONEER
Stanflex
Quality Gloves for 35 Years

ALWAYS FINISHES FIRST

—and saves on compound—it's "metered"!

Liquimatic®

the perfect liquid compound for all metal finishing

How much of the compound in your buffing room is wasted... in the nubbin pile, or in "over-heading" buffs? There's a way to "meter" the compound you use—the Liquimatic way. An electrically timed system in the Liquimatic Process feeds the exact amount of liquid compound for the exact cut you need. While compound is being saved, buffs are being saved too ... continual lubrication extends buff life up to 400%.

These two cost-saving advantages alone soon pay for a complete Liquimatic Application System. But there are still other ways Liquimatic will help you cut costs. No hand application, and no changing of bars will effect substantial down-time savings for you... and Liquimatic's ease of cleaning means even further economies. Now—when production must be upped, and costs lowered — profit from Liquimatic—over and over again.

Check the other features of Liquimatic ... then write today for your free copy of Liquimatic's big, new folder that tells the whole cost-saving story of Liquimatic in *your* buffing room.

These additional Liquimatic features mean real savings in terms of time, money, safety—

- longer buff life
- completely automatic
- fast cutting
- easy cleaning
- non-settling
- high flash point
- long storage life
- sprayable viscosity
- adhesive slow-wearing buff face

Liquimatic ...
gives more buff mileage

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING COMPANY
Main Office and Plant, Matawan, New Jersey
J. C. Miller Division, Main Office and Plant, Grand Rapids, Mich.
SALES OFFICES: Anderson (Ind.) • Baltimore • Beloit (Wisc.) • Boston Bridgeport • Chicago • Cleveland • Dayton • Detroit • Grand Rapids • Los Angeles • Louisville • Matawan • Milwaukee New York • Philadelphia • Pittsburgh • Plainfield • Rochester St. Louis • San Francisco • Springfield (Mass.) • Utica Wallingford (Conn.)

H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

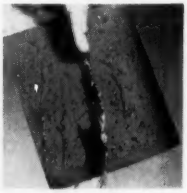
bearings are other features.

For further information, write the Sundstrand Machine Tool Company, Pneumatic Division, Rockford, Ill., or circle No. 7 on Reader Service Card inside cover.

★ ★ ★

Sandpaper

Two grades of tough, fine waterproof sandpaper have been introduced by Behr - Manning Corporation of Troy, N. Y. The excellent wet sanding properties embodied in these 500-A and 600-A grit papers should make them ideal for quality wood and metal finishing work, it is claimed.



Behr-Manning Waterproof Sandpaper

Developed especially for wet sanding of lacquer finish coats, the silicon carbide grain papers are additions to the Tufback series originally introduced in grades 220-A to 400-A. The characteristic flexibility, toughness, durability, and leathery feel of the coarser grades of this brand of sandpaper have been retained. Behr-Manning claims an outstanding uniformity of grain for such fine grades of coated abrasives.

The 500-A and 600-A grits are available in sheets.

For further data, circle No. 8 on Reader Service Card inside back cover.

Du-Lite FINISHED

The Marlin Firearms Co., "Famous for Fine Guns since 1870", has long depended on Du-Lite black oxide for an attractive finish that will be dimensionally stable throughout the life of the gun.

The Du-Lite process provides intricate precision parts with a durable, rust-resistant black oxide finish. And since Du-Lite penetrates the metal, all crevices and knurls are protected without affecting dimensions or fit.

If your target is durable, attractive, economical finishing, you'll want to know more about Du-Lite black oxide.

Whatever your cleaning or finishing problem—
Depend on Du-Lite.

Write for complete information.

Du-Lite DU-LITE CHEMICAL CORP. MIDDLETOWN CONN.
METAL FINISHING SPECIALISTS

BUCKINGHAM POLISHING and BUFFING COMPOSITIONS

- Stainless Steel Composition
- White Finish
- Tripoli
- Chrome Coloring Composition
- Greaseless Composition
- Emery Cake
- Brass Coloring
- Emery Paste
- Burring Compound
- Grease Stick
- Spray Pastes Stainless Steel Tripoli

Representation in Major Cities *Write Dep't. C for Samples*

The BUCKINGHAM PRODUCTS Co.

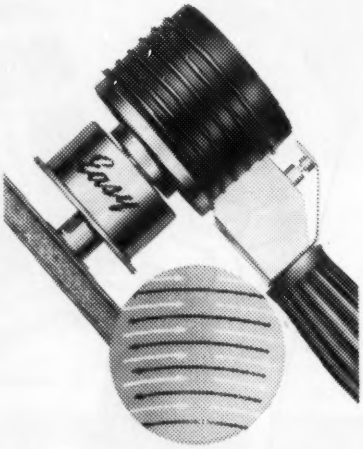
14100 FULLERTON AVE. • DETROIT 27, MICH.

Dual Rotation Sander

A sanding machine known as the Model D. A. Dual Action Sander has been announced by the Detroit Surfacing Machine Co. It is equipped with a device which causes it to have off-center rotation in a direction the reverse of the rotation of the rotating disc. Thus the disc rotates at 6000 r.p.m. to the right, and the off-center rotation causes a fast reverse action to the left. Weight of the unit is approximately 3 pounds.

Advantages claimed for this type of action are faster cutting action and longer abrasive life, especially when sanding materials that load quickly. This feature also counteracts torque, making it easier to operate, and reduces abrasive swirl. Air operated, the unit converts quickly to a high speed, "off center" spinner by pressing a device called a "shift ring."

For further information, write Detroit Surfacing Machine Co., 1333 E. Eight Mile Rd., Detroit 20, Mich., or circle No. 9 on Reader Service Card inside back cover.



Model D.A. Dual Action Sander

★ ★ ★

Phosphate Coating Material

Announcement has been made of an addition to the line of phosphatizing materials produced by Klem Chemicals, Inc. Called Klem Kote No. 1105, this material contains improved accelerators and is most effective in cleaning metals, especially where carbon smut is a problem.

A moist white powder, it can be dissolved in water and used on ferrous and non-ferrous metals, with either spray or immersion cleaning equipment, to produce an iron-manganese type coating. The manufacturer especially recommends it for 3 stage spray operations.

For further details, write Klem Chemicals, Inc., 14401 Lanson Ave.,

TECH-TIN
Pure Tin Plate in 5 to 60 seconds by immersion only
Low-cost bulk finishing for brass and copper — no electrical current, no expensive equipment. Send $2.00 or purchase order for one-pound Tech-Tin sample and instructions. Shipped prepaid.
TECHNIC INC.
Jackson 1-4200
PROVIDENCE 1
RHODE ISLAND, U. S. A.
The largest Enterprise of its kind in the World

Now... get more for your anode dollar!

NEW ANACONDA "PLUS-4" ANODES*

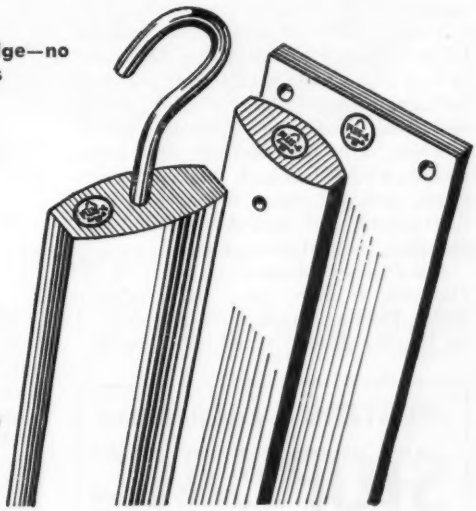
(PHOSPHORIZED COPPER)

+1 **Freedom from anode sludge—no "bagging" or diaphragms required.**

+2 **No copper build-up in solution.**

+3 **Exceptionally smooth, heavy cathode deposits.**

+4 **10% to 15% more cathode deposits per pound of anode.**



It has been discovered that carefully controlled amounts of phosphorus, together with minute amounts of other elements in electrolytic copper, make anodes of vastly superior quality for acid plating. ANACONDA "PLUS-4" Anodes are available in all the standard sizes and forms at no increase in cost over ordinary anodes. Look for the stamp "PLUS-4" on the anodes you buy.

We'll be glad to supply additional information, in detail, without obligation. Just write to: The American Brass Company, Waterbury 20, Conn.

*For use under Patent No. 2,689,216

54160

ANACONDA® **"PLUS-4" ANODES**

made by THE AMERICAN BRASS COMPANY

Dearborn, Mich., or circle No. 10 on Reader Service Card inside back cover.

★ ★ ★

Corrosion-Resistant Valves

H. N. Hartwell & Son, Inc., Boston, Mass., has announced the addition of all-molded, seamless valves to the line of corrosion-resistant pipe, fittings, rods, blocks and sheets produced by the company. These products are fabricated from Boltaron 6200, an unplasticized polyvinyl chloride plastic.

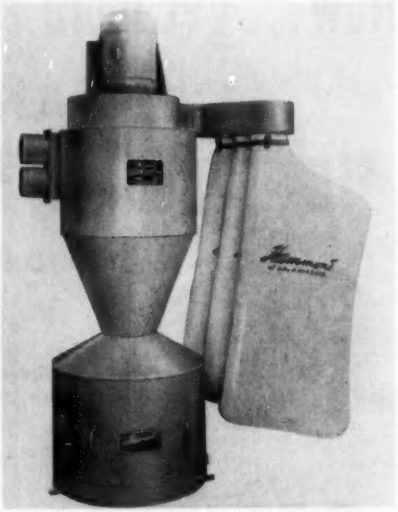
The valves and standard threaded I.P.S. fittings are available in sizes from ¼ to 2 inches, and are resistant to most industrial chemicals, including strong and weak inorganic or organic acids, alcohols, and alkalies. In pipe form, Boltaron 6200 has high flow characteristics, and will not rust or scale. It is lightweight, and may be threaded and handled like ordinary pipe.

For further information, write H. N. Hartwell & Son, Inc., Park Square Bldg., Boston, Mass., or circle No. 11 on Reader Service Card inside cover.

PLATERS' STOP OFF PUTTY
Formula No. 5
Trial pound $2.50
Info on request.

Acid Resistant
A plug for threaded holes and cavities. A cap for nuts and bolts, also gears and racks.

ANDERSON'S PLASTICS CO.
Box 416, Natick, Mass.



Hammond Model CYB-8 Cyclone Duskolector

Dust Collector

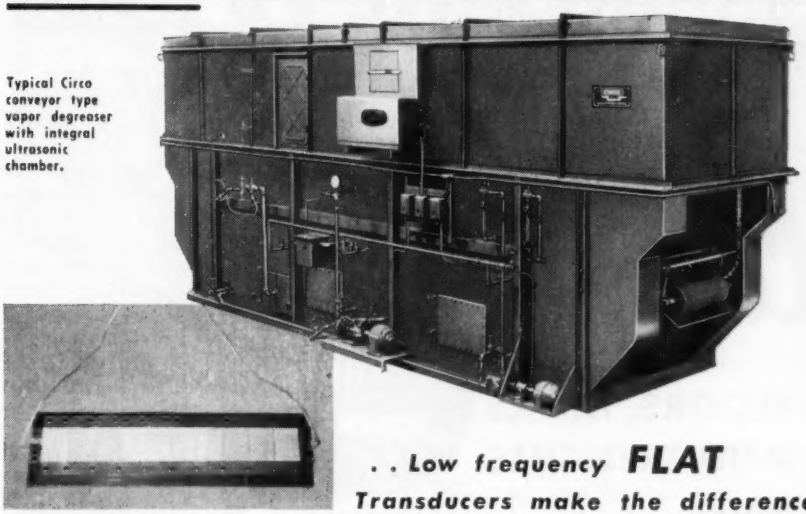
Identified as the Cyclone "8" Duskolector, a dust collector which is available for exhaust to the outdoors (Model CYO-8) or exhaust into three self-contained dust collecting bags (Model CYB-8), has been announced by Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich. Said to be well-suited for a wide variety of buffing, polishing and general grinding operations, the unit has a capacity to handle a large volume of dust and dirt from various types of dust-producing operations. According to the manufacturer, the unit is capable of collecting

For a real good polishing job use
Keystone TURKISH Emery
FRESH SUPPLY AVAILABLE
KEYSTONE EMERY MILLS *Write for Sample* **4316 Paul St., Phila., Pa.**

Scrubs out the last speck of *DIRT*

CIRCOSONIC ULTRASONIC DEGREASER

Typical Circo conveyor type vapor degreaser with integral ultrasonic chamber.



. . Low frequency *FLAT*
Transducers make the difference!

Use Circosonic whenever cleanliness must meet stringent industrial or military standards. New transducer operates at lower frequency (100 kc) which cuts shadow effect so that ultrasonic waves curve around corners . . . remove every last speck of oil, grease, lapping compound and dirt from deepest recesses and capillaries as no other method can do. New flat shape beams sound energy over wider area . . . requires no critical positioning when cleaning small parts like bearings and electronic components . . . extends to any desired length for large shapes like transmission pumps and gears. Circosonic units provide new standards of cleanliness while cutting cleaning time from hours to *seconds* . . . may also be integrated into existing cleaning equipment.

SINCE 1923

CIRCO

EQUIPMENT COMPANY

MANY STANDARD MODELS . . . Units from 500 watts to 25 kw. Available separately or integrated with Circo Vapor Degreasers, conveyorized or hand operated. All backed by nationwide technical field service.

YOUR INQUIRY BRINGS complete ultrasonic technical data . . . plus authoritative 32-page Vapor Degreasing Manual. No obligation, of course.

122 Central Avenue, Clark (Rahway), New Jersey Offices in principal cities

PER-SOLV (Perchlorethylene) **CIRCO-SOLV** (Trichlorethylene)

Vapor and Ultrasonic Degreasers • Metal Parts Washers • Dryers • Solvent Recovery Stills

the dust from both sides of two average polishing and buffing lathes.

The collector utilizes a 5-h.p. motor and has a capacity of 2,000 c.f.m. The inlet diameter is one 8-inch or two 6-inch openings, and the outlet is 9 inches in diameter.

For further data circle No. 12 on Reader Service Card inside back cover.

Surface Finish Testing Accessories

Six accessories for special applications have been developed for the Brush Surfindicator, an instrument for measuring surface finish roughness, by the Brush Electronics Co., Cleveland, Ohio.

Used with the general purpose Pickup Model BL-111, these six attachments plus the Motor Drive Model BL-114, provide a method of measuring surface roughness to include nearly every purpose related to this field.

Attachments include adaptors for allowing the measurement of roughness in very small internal diameters, such as gear teeth and other limited access areas; for measuring cutting edges, or other very small outside diameters; for measuring surfaces in slots; for measuring the finish of holes and counterbores; for measuring very rough surfaces, such as castings; and for hand operation where desirable, such as in

Ceilcrete
FOR
FLOORS, TANKS AND TRENCHES

A NEW ACIDPROOF COATING FOR CONCRETE

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gear teeth.

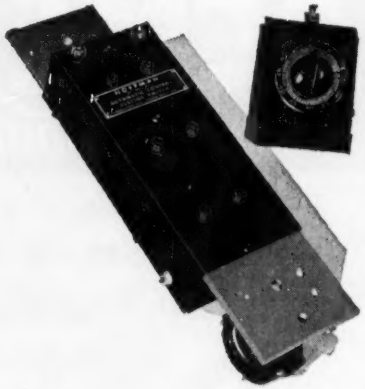
Additional information may be obtained from Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio, or by circling No. 13 on Reader Service Card inside back cover.

★ ★ ★

Automatic Plating Switch

A device offered by the Hoffman Plating Co., 6804 Park Ave., Cleveland, Ohio, automatically terminates current flow in barrel plating systems after sufficient deposits have been made on the parts being plated.

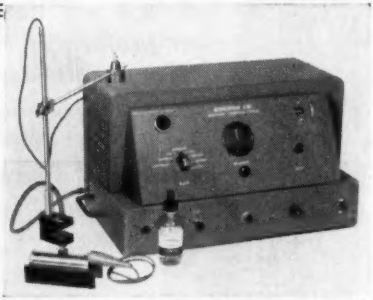
Two units make up the Hoffman Automatic Cut-Off Plating Switch. One is the control box that may be mounted anywhere near the tank. Having its own electrodes, it can be installed in any barrel plating system by removing the cathode bar and replacing it with the Hoffman control box. The other unit is the automatic time switch that may be mounted as part of the control box or anywhere near the tank.



Hoffman Automatic Cut-Off Plating Switch

On each control box, there are two signal lights. To start the plating cycle

Be sure of your
PLATING
THICKNESS
with the



KOCOUR Electronic Thickness Tester

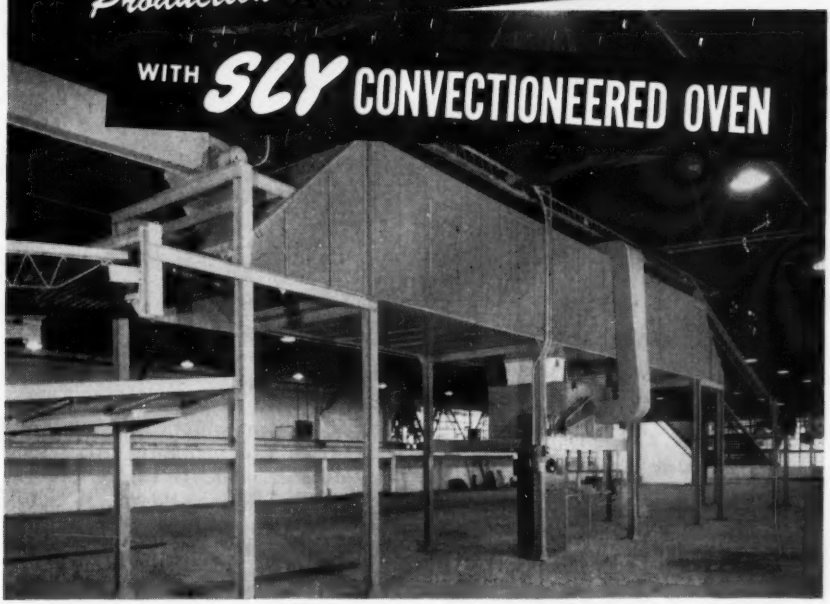
There's no room for guessing plating thickness when you can have accurate readings quickly. The Kocour Electronic Thickness Tester determines the thickness of chromium, silver, tin, cadmium, zinc, brass, copper, nickel, lead, and other plating. Readings are direct . . . accuracy 90-95%. Write for further information . . . no cost, no obligation.

FREE! Get your reprint of "THICKNESS of ELECTRODEPOSITED COATINGS BY THE ANODIC SOLUTION METHOD" by C. F. Waite.

KOCOUR CO.
4814 S. St. Louis Ave.
CHICAGO 32, ILLINOIS

Production and Quality Up!

WITH **SLY** CONVECTIONEERED OVEN



With an increase in business, the Interior Steel Equipment Co. has augmented their paint baking facilities. In doing this they have achieved economies in handling of work while maintaining and even enhancing the quality of their products.

They installed a Sly Convectioneered Oven, 45′ long, 9′ 6″ wide, 6′ 9″ high with semi "A" type sheet metal hoods at the exit and entrance ends to form an efficient heat seal. Beneath the oven is a self-contained 2,500,000 BTU per hour direct gas-fired heating unit.

As aids in achieving excellent finishes on the products are: (1) efficient air distribution over the work (2) temperature uniformity in the baking zone (3) correct exhaust conditions to maintain proper oven atmosphere, and (4) a low overall temperature gradient between supply and recirculation temperatures.

This installation is typical of the careful engineering that goes with all Sly Industrial Ovens. *May we discuss your requirements with you?*

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the operator pre-sets the plating time on the timer switch. One light goes on as the plating cycle begins. When the cycle is completed, the other light goes on, signaling the end of the plating cycle and cut-off of the current. Thus excessive overplating is prevented and materials are saved.

The Hoffman Automatic Cut-Off Plating Switch is available in standard models having a capacity of 600 amperes and voltages from 5 to 15 volts.

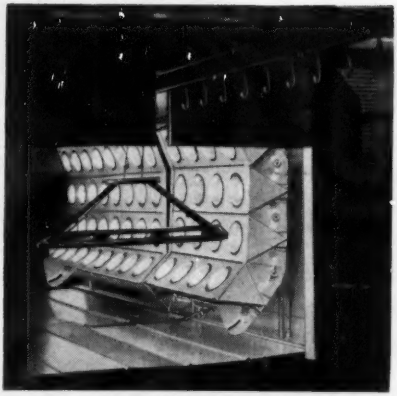
For further data circle No. 14 on Reader Service Card inside back cover.

★ ★ ★

Infra-Red Conversion Unit

A unit for converting present drying equipment to infra-red drying has been announced by the Patent-Flex Mfg. Company, Cloverport, Ky.

Several models are available in standard lengths of 24, 32, and 48 inches. All are equipped with mounting brackets to facilitate installation. Any number of lamps can be used to furnish the desired height of lamp bank. Each lamp row is adjustably mounted so that the entire bank of lamps can be used flat or curved to any shape desired. Thus the lamp row arrangement can be suited to the individual job. Units are supplied factory wired or unwired and use a hermetically sealed reflector heat lamp.



Infra-Red Conversion Unit

For further information, write Dept. PF, Patent-Flex Mfg. Company, Cloverport, Ky., or circle No. 15 on Reader Service Card inside back cover.

★ ★ ★

Aluminum Cleaning Process

An improved method for cleaning aluminum parts prior to spot welding has been introduced by the Magnus Chemical Co., Inc., Garwood, N. J. The method uses an alkaline cleaner, Magnus No. 71, and an agitated cleaning machine, the Magnus Aja-Dip Cleaning Machine. The latter machine

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NEW, BRIGHT COPPER PROCESS
A One-Material Brightener
FOR ALL BARREL AND STILL CYANIDE SOLUTIONS
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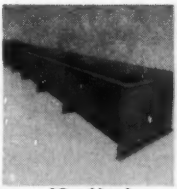
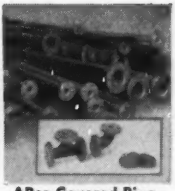
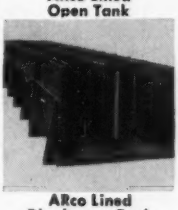
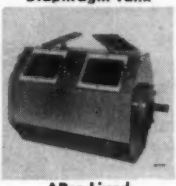
Corrosion-resistant ARco rubber coverings are applied to tanks and accessories, Diaphragm Systems, Parts Separators, Air Agitation Systems, Grids and Screens, Ventilation Equipment, Pipes and Fittings, Materials Handling Equipment. For expert advice on economical, efficient rubber applications to electroplating equipment, call on ARco Engineers. Their help is offered to you without obligation.


ARco Lined Open Tank


ARco Covered Pipe, Fittings


ARco Lined Diaphragm Tank

ARco Lined "Handy-Tanks"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moves parts up and down in the cleaning solution rapidly, providing mechanical shearing action in addition to the chemical action of the cleaner.

A test of the method, using the micro-ohm test, showed excellent results. Parts cleaned for the test were soaked and agitated in the cleaning solution for 3 minutes and 7 minutes, followed by a cold water rinse. Parts cleaned by the Magnus method for 3 minutes showed a resistance of 15-20 micro-ohms, and those pieces cleaned for 7 minutes tested 13-18 micro-ohms.

For further data circle No. 16 on Reader Service Card inside back cover.

★ ★ ★

Quartz Thermostat

A quartz thermostat, immune to chemical attack but extremely sensitive to temperature, has been announced by the manufacturer, N. J. Thermex Company, Inc., 533 Bergen St., Harrison, N. J.

Thermex Quartz Thermostat

The unit consists of an outer chemically resistant quartz tube and a contained liquid which actuates the contact mechanism by expansion and contraction resulting from temperature changes.

Thermex quartz thermostats provide high capacity and are ideal when space is limited. Their rating is 5000 watts at 120-240 volts. Operating temperature range may be adjusted by a dial. The thermostat tube can be supplied in lengths from 6 to 36 inches.

For further data circle No. 17 on Reader Service Card inside back cover.

★ ★ ★

Heat Resistant Paint

The Vita-Var Corporation, paint manufacturers, Newark, N. J., has announced the development of a product to be known as Vita-Var No. 14550 High Temperature Resistant Coating.

This product can be used on ferrous metal surfaces to give a durable, corrosion resistant finish that will withstand temperatures up to 2000 deg. F. It has been used on exhaust manifolds of diesel motors for heavy equipment with excellent results, the manufacturer states.

For further data circle No. 18 on Reader Service Card inside back cover.

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TOP PRODUCTION...

with unskilled hands

GASWAY ROLLACOATING...

has common sense and experience built right in

Even unskilled hands can turn in top production records with Gasway ROLLACOATING. It's proved the fastest way to apply coatings to flat sheets or panels. And users report that inexperienced help can show production rates up to 100 lineal feet per minute.

Gasway ROLLACOATING has the experience built in. It's the controlled finishing method. The amount of finish laid on the work is precisely metered—and it all goes right where you want it. Feed in the material, and ROLLACOATING does the rest of the job. A perfect finishing job every time—film thickness is controlled to within a tenth of a mil, and coverage is always 100%. You get more mileage from every gallon of paint, because there's no waste, no overspray, no puddling.

Compare other finishing methods with the speed, quality, and economy of easy Gasway ROLLACOATING. Write for all the facts.

Gasway CORPORATION

Gasway makes a complete line of machines for roll-finishing flat sheets and panels up to 72" wide, and the only completely integrated continuous cleaning-treating-finishing-baking lines for flat strip and webs.

6461 NORTH RAVENSWOOD AVENUE, CHICAGO 26, ILLINOIS

Portable Sand Blast Gun

Lindberg Products Co., Los Gatos, Calif., has announced a sand blast gun which is a single unit, and is furnished complete and ready to use. For use, the gun's 1 quart metal container is filled with abrasive material, the unit is connected to a compressed air line, and triggered into action by a thumb-controlled valve. Abrasives which may be used with the gun include silica sand, metal shot, nut shell abrasives, reflective materials, and aluminous oxide abrasives. The action of this gun is comparable to many large sand blast machines, except that the area covered is smaller. Thus the gun is particularly useful for blasting small parts and removing rust scale, paint, and dirt from places not easily accessible.

The Lindberg Portable Sand Blast Gun can also be used for wet blasting. It will siphon liquids directly from drums or tanks, and will blast liquids effectively for cleaning purposes. It may be used with air pressures ranging from 60 to 150 p.s.i., depending upon the degree of cutting action desired—the higher the pressure used, the faster the cutting action. Designed for continuous service, the gun body is fabricated from a zinc die casting, and hardened steel is used for all wear parts. All parts are replaceable.

Sand Blast Gun

For further information, write Lindberg Products Co., Box 885 P, Los Gatos, Calif., or circle No. 19 on Reader Service Card inside back cover.

★ ★ ★

Rust Remover

Kelite Process 235 is a dry powder which, in water solution, removes hard water scale, rust and paint from ferrous metals. At a concentration of 3 pounds per gallon of water at temperatures of 180-212 deg. F., Kelite Process 235 completely removes rust. No electrolytic current is used and the material is non-acid.

The pH is high, yet Kelite Process 235 is safe on all ferrous metals and the rate of attack on copper is low, the manufacturer states. Lead, zinc, and

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These industrial-quality materials have been developed, out of broad industry experience, to meet the great majority of product finishing needs, whether wood or metal, air-dry or bake, for brush, spray, dip or other forms of application. Investigate—today—the benefits one or more of these widely proved materials can offer you in time, cost and convenience! Call your nearby Sherwin-Williams Branch or mail the coupon below.

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aluminum are subject to deleterious attack. Complete data on Process 235 is available from the manufacturer, Kelite Products, Inc., 1250 N. Main St., Los Angeles 12, Calif., or by circling No. 20 on Reader Service Card inside back cover.

★ ★ ★

Vacuum Gauge

A single station thermocouple gauge with a printed circuit has been announced by the Consolidated Vacuum Corp. Designated the type TG-029, it is compact and portable.

The instrument is calibrated for air, with one direct reading meter scale covering the range from 1 to 1000 microns Hg. It measures the total pressure of condensable vapors in a system, and is not harmed by exposure to atmospheric pressure. The gauge tube, CVC type TG-77, is not easily contaminated by hot organic vapors.

Type TG-029 Vacuum Gauge

The cabinet measures 5¼ by 6¼ by 6⅛ inches, and the metal tube is 2⅞ inches long, including the ⅛-inch N. P.T. nippled tabulation. Further infor-

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New Singleton "H-T Sincolite" Test Cabinet

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Lasts Years Longer—Exclusive Singleton Fusion-Welded "H-T Sincolite"—permanent, no leak seams. No deterioration, no maintenance, won't wear out. **The finest at the lowest price!**

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mation may be obtained by writing the Consolidated Vacuum Corp., Rochester 3, N. Y., or by circling No. 21 on Reader Service Card inside back cover.

★ ★ ★

Sheet Scrubbing Machine

An industrial scrubbing machine that cleans surface dirt and oils from both sides of metal sheets has been developed by the Fuller Brush Company Machine Division.

The sheet scrubber cleans plates to the degree necessary to pass the water break test for cleanliness, the manufacturer states. That is, a film of water spread on the surface will be continuous when the plate is clean. The water film breaks where any surface oil remains.

There are two models, a long and a short. The longer machine removes heavier accumulations of surface dirt. Either machine processes sheets at the rate of 60 feet a minute. A detergent and water solution is pumped onto the plates when they enter the machine. They are then scrubbed with nylon cylindrical brushes, and rinsed and dried as they come out.

For further information, write the Fuller Brush Company Machine Division, Hartford 2, Conn., or circle No. 22 on Reader Service Card inside back cover.

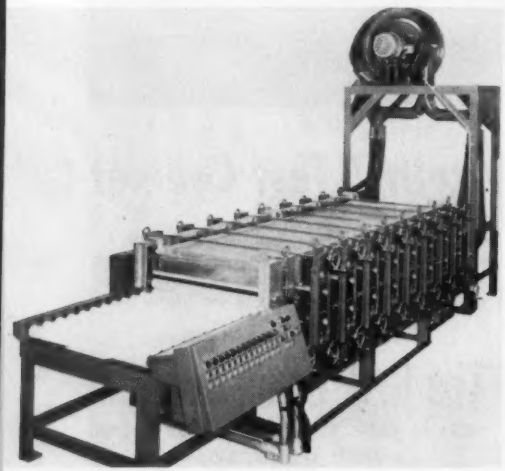
★ ★ ★

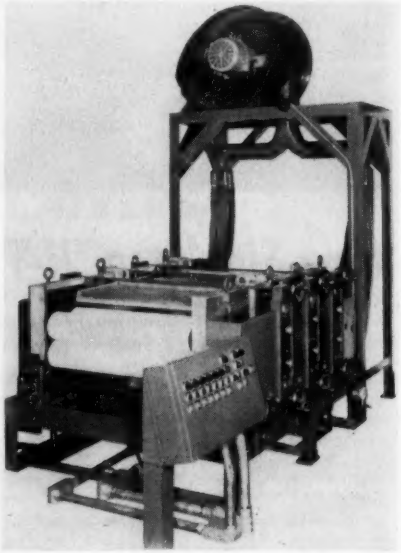
Abrasion Tester

The Porcelain Enamel Institute has announced the development of an Abrasion Tester for testing and measuring the abrasion resistance of porcelain enamel and other finishes and materials. The instrument was developed under the guidance of the P. E. I. Quality Development Committee by the Institute's Research Fellowship at the National Bureau of Standards.

The P.E.I. Abrasion Tester is used

Long (below) and short (right) models of scrubbing machine designed by Fuller Brush Company Machine Division to remove dirt from metal plates and sheets.





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ANODES of Copper, Brass, Bronze, Zinc in all types.

BRIGHT NICKEL produces bright deposits without coloring and buffing.

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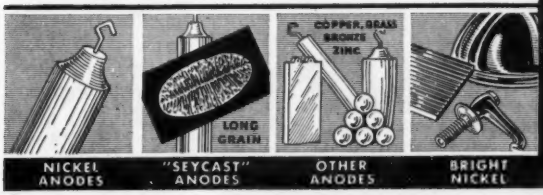


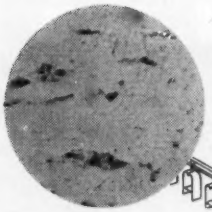
in both control and research. While the tester has been used principally for testing porcelain enameled metal specimens, it has drawn the interest of manufacturers in other fields such as paint finishing.

The compact unit consists of a motor-driven table which gyrates in a horizontal plane at a frequency of 300 r.p.m.; each point on the table describes a circle ⅞ inch in diameter. The table is driven by a ¼ h.p. synchronous motor; the time of test is accurately controlled by an electric timer.

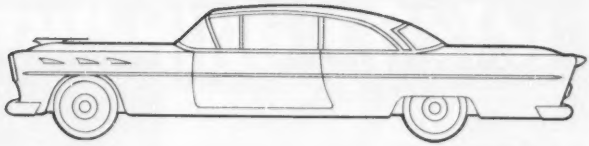
A specimen is placed in any one (or more) of the nine available positions and secured by means of a rubber-coated aluminum retaining ring. The abrasive charge is added through a hole in the top of the retaining ring. For porcelain enamels, the degree of abrasion resistance has been evaluated in terms of both weight loss and gloss loss. Suitable apparatus is available for making both types of measurement. The wear of less resistant materials can be evaluated in terms of thickness loss.

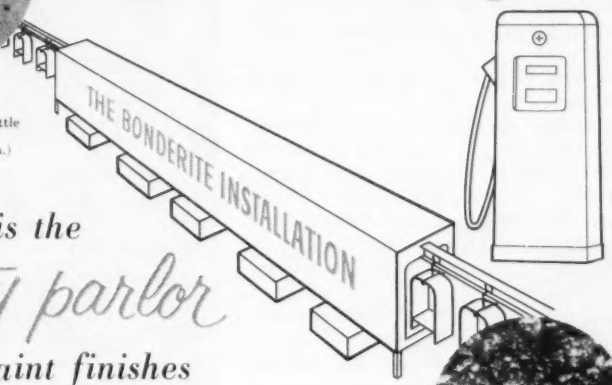
One of the advantages of the P.E.I. Abrasion Tester is that it will provide an accurate and uniform measurement of the abrasion resistance of a surface regardless of the degree of smoothness of the surface. Orange peel, eggshell finish, and waviness of finish in no way affect the accuracy of abrasion measurements with this instrument, states the manufacturer.

Further data may be obtained from the Porcelain Enamel Institute, 1346 Connecticut Ave., N. W., Washington 6, D. C., or by circling No. 23 on Reader Service Card inside cover.

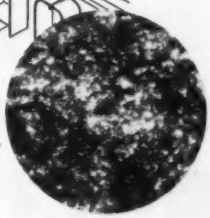


BEFORE BONDERITE . . .
Plain metal surfaces are smooth, slippery, offer little for paint to hang on to. (100 times magnification.)





This is the beauty parlor for fine paint finishes



AFTER BONDERITE . . .
Bonderite-treated metal has a fine, nonmetallic phosphate coated surface, takes and holds paint securely. (100 times magnification.)

As the photomicrographs show, a trip through the Bonderite "beauty parlor" changes the surface of metal—changes it to a nonmetallic over all phosphate coating which is integral with the metal itself.

This coating protects and preserves beauty three ways: (1) by anchoring the paint, (2) by resisting rust and corrosion, and (3) by preventing the creep of finish failure if the paint film is scratched or broken.

The leading painted metal products in every classification, from automobiles and appliances to steel windows and x-ray equipment, are treated with Bonderite.

Your metal products, too, should all go through the Bonderite "beauty parlor" before they arrive at the paint booth. It's the economical, effective, *proven* way to assure lasting fine appearance for fine paint finishes.

Write for full information.

Since 1915—Leader in the Field

PARKER RUST PROOF COMPANY
2172 E. Milwaukee, Detroit 11, Michigan

PROTECTED BY Bonderite PARKER RUST PROOF CO. QUALITY CORROSION RESISTANT

BONDERITE corrosion resistant paint base

BONDERITE and BONDERLUBE aids in cold forming of metals

PARCO COMPOUND rust resistant

PARCO LUBRITE wear resistant for friction surfaces

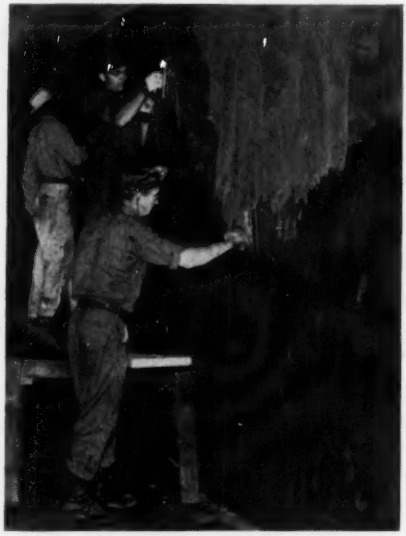
TROPICAL heavy duty maintenance paints since 1883

Concrete Surface Treatment

The Ceilcote Co. has announced the availability of an improved surface treating material, which is recommended for protection of concrete from fluorides, hydrofluoric acids, and other acid solutions.

Called "Ceilcrete B," this thermosetting plastic base surfacing can be applied to floors, trenches, tank bases, and other concrete structures. A minimum coating of ⅛-inch provides a monolithic membrane that is impervious to solutions containing hydrofluoric acid.

Ceilcrete "B" has been used successfully for lining pickling tank pits where hydrofluoric acid is being used. In this application, walls, sides, and floors of the pits were coated with a ⅛-inch thickness of the coating, providing a protective coating for the concrete.



Ceilcrete "B" being applied to concrete walls for protection from acids.

The manufacturer further states that Ceilcrete "B" is not confined exclusively to applications where hydrofluoric acids are used. Rather it can be used in a wide variety of installations because only a few chemicals have any marked corrosive effect on this improved material.

The Ceilcote Company manufactures a complete line of corrosion-proof linings, bricks, bonding cements, protec-

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

Write (Dep't. P) on your letterhead for catalog and price list.

DIXON & RIPPEL, INC. KINGSTON, N. Y.
ESTABLISHED 1856

McKeon's "Liquid Sulphur"

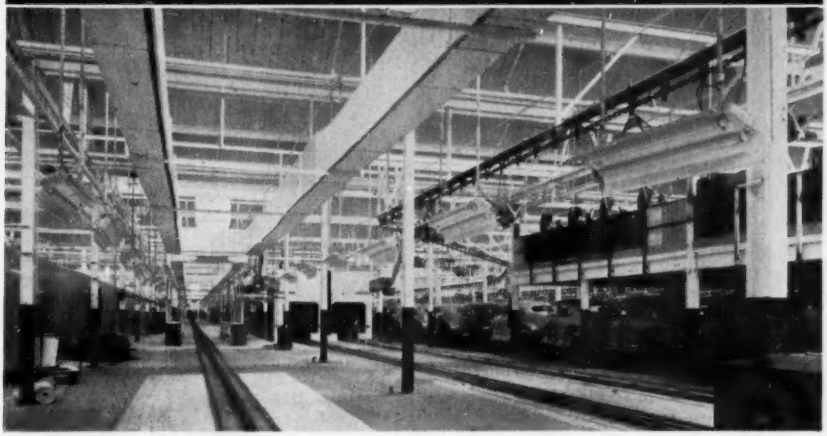
Economical, satisfactory for

STRIPPING COPPER
and
OXIDIZING COPPER AND SILVER

Literature on request

Sulphur Products Co., Inc.
228 McKEON WAY GREENSBURG 6, PA.

CUT FINISHING COSTS!



WITH A COMPLETE *Conveyorized* FINISHING SYSTEM BY KOCH

KOCH BUILDS:

- *BAKING OVENS*
- *SPRAY BOOTHS*
- *METAL WASHING EQUIPMENT*
- *COMPLETE FINISHING SYSTEMS FOR BOTH WOOD AND METAL*
- *AIR MAKEUP SYSTEMS*

"Single responsibility"— a two-word symbol of peak efficiency in your system.

KOCH's "single responsibility" insures a perfect dove-tailing of all components, no last-minute changes, no costly extra work.

Let KOCH engineers study your finishing set-up now. Their recommendations may well be the most profitable development of the year for you.

▶ **WRITE FOR CIRCULAR 124**

GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

tive coatings and mastic floors. Ceilcote services also include supervision for installation or contracting for the complete job, including labor, materials, equipment and supervision.

For further data circle No. 24 on Reader Service Card inside back cover.

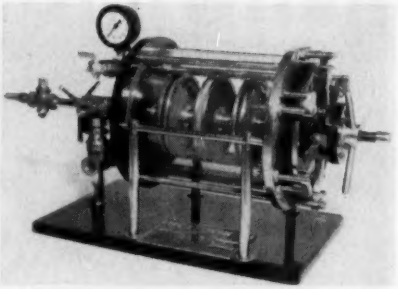
★ ★ ★

Plastic Test Filter

Many manufacturers have installed small test filters in production lines to determine the suitability of such equipment to their needs.

To meet the need for a test filter unaffected by corrosive liquids, the Hercules Filter Corporation, of Paterson, N. J., has produced an all-plastic filter. This filter is available with leaves made of any one of three different plastic materials: acrylic, glass-reinforced polyester, and polyvinyl chloride.

This test filter is a replica of the large Hercules pressure leaf filter. It allows manufacturers to determine the performance of a filter for the operation they are testing, and also enables them to determine the reaction of three different types of plastic to the corrosive action of their materials.



Hercules Plastic Test Filter

This test filter is of one-half foot capacity. It may be used with liquids up to 150 deg. F., except in the case of the polyester model, which can be used up to a temperature of 300 deg. F.

For further information, write Hercules Filter Corp., Paterson, N. J., or circle No. 25 on Reader Service Card inside back cover.

★ ★ ★

Chemical-Resistant Work Clothes

A Dynel weave cloth, specially fabricated to meet the demands of modern industry, has been made available in a complete line of work clothes by Worklon, Inc., New York, N. Y. The Dynel cloth is particularly resistant to acids and caustics.

These clothes present a neat appearance, and are furnished in a grey color, which serves to camouflage dirt, thus saving on laundering. Dynel garmets are woven so as to be comfortable for year-round use. Complete details

YOU can rely on
Randolph
for prompt shipment
in any quantity of
• FINISHES •
Lacquers • Enamels
Dopes • Thinners
Clear Metal Finishes
Colored Lacquers
Clear S.G. for Metal
Texture Enamels
Specialized Production Finishes
Aircraft Finishes
RANDOLPH
PRODUCTS CO.
CARLSTADT, NEW JERSEY

FORD USES BEDE PAINT HEATERS

CUT PAINT LOSSES

INCREASE PER GALLON COVERAGE

SAVE ON SOLVENTS

REDUCE HEALTH HAZARDS

MAINTAINS UNIFORM VISCOSITY

ADAPTABLE TO FIT YOUR NEEDS

Quick Drying Touch-Up

Uniformity in finished appearance is an important factor in auto body finishes and Ford is mighty particular.

Bede Paint Heaters make it possible to do a better job, faster, at less cost than ever before and most important . . . the finish is superior.

If you aren't acquainted with Bede Paint Heaters, it will pay you to investigate today. . . . Write us.

WRITE FOR CATALOG ON REVOLUTIONARY NEW AIRLESS SPRAY PAINTING PROCESS . . . *IT'S NEW*

BEDE PRODUCTS CORPORATION

HOT SPRAY AND AIRLESS INDUSTRIAL FINISHING EQUIPMENT

JACKSON ST. AMHERST 44-711 AMHERST, OHIO
DEPT. U. S. A.

regarding these clothes may be obtained from Worklon, Inc., 253 W. 28th St., New York, N. Y., or by circling No. 26 on Reader Service Card inside cover.

★ ★ ★

Automatic Rinse Tank Controller

The Solu Bridge Automatic Rinse Tank Controller has been adapted for the plating industry to reduce water consumption and produce better plating quality. Developed by Industrial Instruments, Inc., Cedar Grove, N. J., the instrument is used to measure and control the amount of dragout between tanks in a plating line.

The Solu Bridge Rinse Tank Controller operates by continuous measurement of the degree of electrolytic conductivity of rinsing waters. Automatic control of the amount of fresh water admitted into rinse tanks is thus permanently established.

Because of the serious water shortage in many areas, and the growing influence of stream pollution laws, there is increasing interest in the batch treatment of collected rinse waters. This system, by allowing less water to be used for rinsing, makes batch treatment more practical.

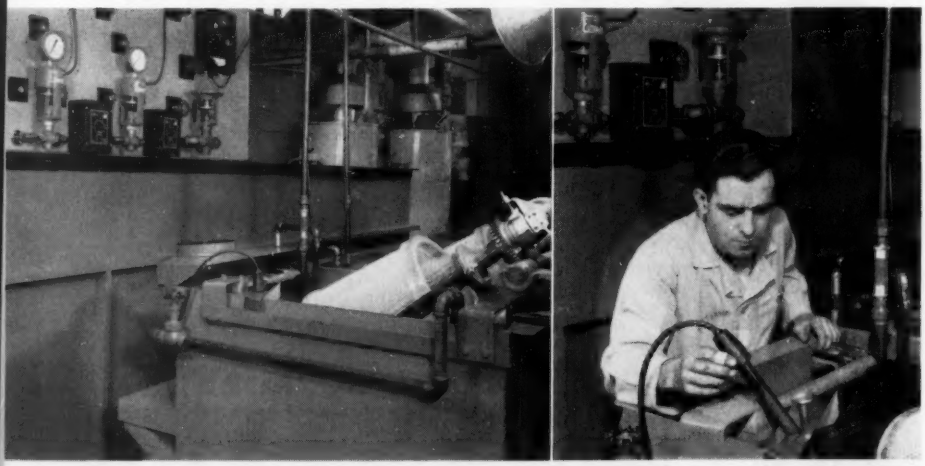
For further data circle No. 27 on Reader Service Card inside back cover.

★ ★ ★

Surface Grinding Machine

The Curtis Machine Corporation of Jamestown, N. Y., has announced the completion of a giant surface grinding machine to be used in the automotive industry for prefinishing steel blanks prior to forming. The 35 ton machine was recently installed in a division plant of one of the leading automobile manufacturers, where it will be used to prefinish automotive bumperettes before they are formed.

The four head abrasive belt surface grinder uses progressively finer grinding belts. Blanks enter the 36 foot ma-



Solu Bridge Automatic Rinse Tank Controller being used to control amount of rinse water admitted into tanks of a barrel plating line.

5 POINTS FOR FLAWLESS GALVANIZING

PROMAT PRE-GALV

● If you galvanize, here are five points by which you can judge your work. If your present process does *not* include complete control over these factors, they can become five good reasons why it will pay you to write for details on the PRE-GALV system:

METAL-PREPARATION — Pre-Galv acid additive provides controlled etching without danger of over pickling . . . an oxide free surface when work enters the flux.

FLUXING—Pre-Galv flux gives maximum adherence . . . *uniform* alloying of zinc to the basis metal.

CONTROLLED DROSS FORMATION—Dross is kept to a minimum in the Pre-Galv process.

UNIFORMITY OF ALLOY LAYER—Adhesion of the zinc and ductility of work processed with Pre-Galv system is superior to that of any known system because of extent and uniformity of the alloy layer produced.

BRILLIANT, CORROSION RESISTANT COATING—Uniform flow out of metal, evenness of alloy layer insures unusual brilliance *plus* top protection for finished work.

● One of a complete line of Promat protective products that are backed by extensive research and responsible service, the Pre-Galv system is easy to use and requires no additional equipment for use. Write for bulletin G1-F today.

PROMAT *Division*

Poor & Company
851 S. Market Street
Waukegan, Illinois

chine on a neoprene conveyor belt. This type of conveying permits the grinding of small blanks as well as large. This particular machine will take stock up to 20 inches in width and any length. Rubber hold down rolls and powerful permanent magnets used at the point of grinding prevent slippage of blanks. The machine is built for dry operation as well as wet abrasive grinding with cutting oil, or with water. Adjustments of grinding heads for various thicknesses of stock can be made quickly and easily through centrally located push-button control. Automatic tensioning and tracking is provided for the abrasive belts. Conveyor speed is infinitely variable from 15 to 60 feet per minute to permit a wide choice of grinding or polishing operations.

For further data circle No. 28 on Reader Service Card inside back cover.

★ ★ ★

Temporary Protective Coating

A temporary protective coating for use on stainless steel, aluminum and copper, has been developed by the Spraylat Corporation, 1 Park Ave., New York 16, N. Y.

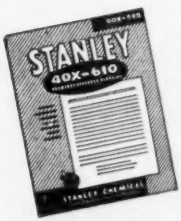
Called Spraylat SC-1503, the material is a water base sprayable compound which, when dry, forms a tightly adhering plastic film that can be removed with water . It can be used to

Curtis Surface Grinding Machine

Weatherproofs in ONE OPERATION

Stanley 40X-610 one-package WASH-PRIMER

Now steel or iron parts can keep the weather at bay throughout a year of outdoor storage without topcoating. Reason: Stanley 40X-610. This one-package, one-operation wash primer for spraying, brushing, or dipping forms a weather-tight skin that lasts. Its resistance to corrosion and rust creep is excellent. And Stanley 40X-610 may be used with most topcoats. Find out more about this low-cost, easy-to-apply outdoor protection . . . write today for the new bulletin on Stanley 40X-610 to: Stanley Chemical Company, 31 Berlin Street, East Berlin, Connecticut.



LACQUERS

JAPANS

SYNTHETICS

ENAMELS

STANLEY CHEMICAL

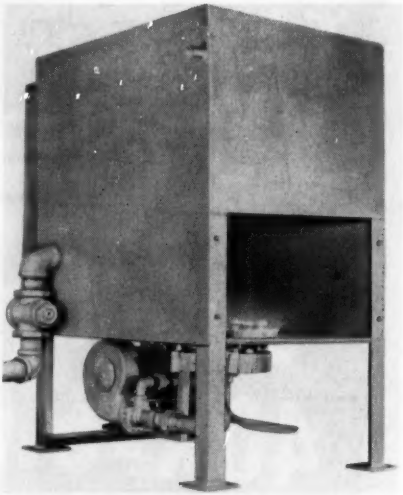
protect surfaces through fabricating operations, such as rolling, blanking and drawing, to prevent scratches, die marks, and other damage. The compound is non-flammable and non-toxic under the conditions encountered during application and removal. For further information, write the Spraylat Corp., 1 Park Ave., New York 16, N. Y., or circle No. 29 on Reader Service Card inside back cover.

★ ★ ★

Small Parts Washer

A compact small parts washer that is well suited for use with commercial cleaning compounds, has been developed by the Burdett Manufacturing Co. of Chicago.

This unit is fired by the Burdett gas-fired "Radiant Heat" System. It is available in three sizes: 100,000, 129,000 or 158,000 B.t.u. per hour. Tank capacity will approximate 50 gallons. It is complete with an inclined trough for scum removal and an overflow drain outlet.



Small Parts Washer

Safety has been an important consideration in the design of this unit. It has a safety control and an automatic gas valve to supervise pilot operation and the main gas supply.

The tank is of heavy gauge welded steel construction with structural reinforcements.

Complete information may be had by writing to C. E. Fitzgerald, sales manager, Burdett Manufacturing Co., 3447 West Madison St., Chicago 24, Ill., or by circling No. 30 on Reader Service Card inside back cover.

★ ★ ★

Grinding Oil

Two polishing oils for use in grinding and finishing ferrous and non-ferrous metals have been developed by D.

TRUE BRITE
OXYPHEN
pH PAPERS

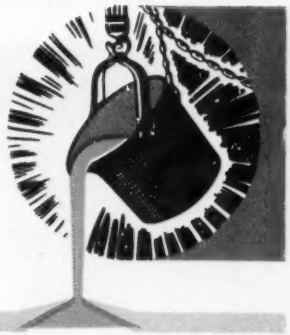
- Each strip identifies itself.
- Packed in transparent pocket-sized case.
- Easy to use—simply match color of indicator bar with corresponding constant color bar.
- A range for every purpose.

WRITE FOR LIST OF RANGES

⅔ actual size

TRUE BRITE CHEMICAL PRODUCTS CO.
BOX 31 • OAKVILLE, CONN.

New ALCALOY CASTING PROCESS *gives you Today's Best Buy in* BRONZE CASTINGS

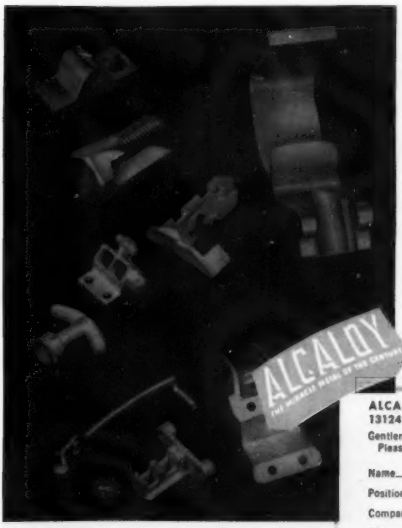


Here's the bonus you get when you put Alcaloy bronze castings to work on your job:

ECONOMY—Our process, combined with our new alloy, enables us to secure results which have been obtainable only by more expensive methods. Machining is reduced or completely eliminated. Scrap loss is reduced to a new low. Less shop equipment is needed. These add up to greater profits for you. What's more, in many instances, the first costs of Alcaloy castings are lower than any other type casting.

Alcaloy's resistance to strong pickling solutions is one of the outstanding reasons for its preference in steel mills, foundries, metal fabricating and finishing plants.

Alcaloy is attractive and stays attractive. Its natural light, gold-like bronze color remains free from tarnish and pitting, thus eliminating maintenance.



Check these Alcaloy Features Today!

ECONOMICAL
NON-SPARKING
NON-MAGNETIC
CORROSION-RESISTANT
(except concentrated nitric acid)
UNIFORM

STRONG—Some grades of Alcaloy have the strength of steel and hardness of C 35-40. This strength is retained and utilized to the fullest extent in the casting process.

Send for free catalog and information on how you can use the new Alcaloy casting process.

ALCALOY, INC.
13124 Shaker Square • Cleveland 20, Ohio

Associated with
DICKEY INDUSTRIES

ALCALOY, INC.
13124 Shaker Square • Cleveland 20, Ohio

Gentlemen:
Please send free catalog ☐ and information on the new Alcaloy casting process to:

Name_____

Position or Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Excelene Grinding Oil is applied from pressurized can.

A. Stuart Oil Co., Chicago, and Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Called "Excelene FD" for ferrous metals and "Excelene NF" for nonferrous metals, the oils are applied to abrasive belts to reduce loading, give them longer life, and aid in faster grinding and improved finishes.

The oils are available in 12-ounce pressurized cans, and are sprayed on a belt simply by pressing the button on the top of the can.

The products have been tested on stainless steel, hot rolled steel and cold rolled steel, as well as aluminum, bronze, brass and other metals.

Further information can be obtained from Minnesota Mining and Mfg. Co., Dept. PF-124, St. Paul 6, Minn., or by circling No. 31 on Reader Service Card inside back cover.

★ ★ ★

Surface Finishing Machine

A redesigned Model No. 204 Clair Surface Finishing Machine, which is capable of complete and simultaneous coverage of both insides and outsides of spoon and fork bowls, has been announced by the Clair Manufacturing Co., Olean, N. Y.

The structural members of this machine have been redesigned for greater strength. Originally limited to 5 h.p. motors, this version of the spoon and fork polisher is built for spindle motors up to 15 h.p. All wear parts incorporate hardened wear inserts. Full advantage has been taken of hydraulic, air, and electrical components in the design of this equipment.

The machine features a V-belt spindle drive, automatic air float of rolls at any predetermined uniform contact pressure, 110 volt control circuits, autocycling, sealed cartridge type ball bearings, high surface speeds, a body pressure safety bar control, and automatic spray application of buffing compounds.

Model No. 204 also incorporates adjustable automatic dwell control to emphasize any local coverage of work;

★ ★ ★

The Masters'
Electro-Plating Association
Inc.
59 EAST 4 STREET
NEW YORK 3, N. Y.

is proud to announce its 37th Annual Banquet and Entertainment to be held on Saturday, May 7, 1955 at THE PLAZA HOTEL, NEW YORK CITY.

★ Reception and Cocktails:
6:30 P.M., Terrace Room

★ Banquet and Entertainment:
8:30 P.M., Grand Ball Room

Subscription: $25.00 per person — Dress (optional)

Thanks... GENERAL MOTORS

UNIVERSAL TUMBLING SUPPLY COMPANY

IN RECOGNITION of its contribution to and membership on a production team responsible for an achievement unparalleled in industrial history—the building by General Motors in the United States of fifty million motor vehicles.

ON THE OCCASION of the production at the Chevrolet Assembly Plant at Flint, Michigan, this Twenty-third of November, Nineteen Hundred Fifty-four, of GM Vehicle No. 50,000,000.

H. H. Curtice

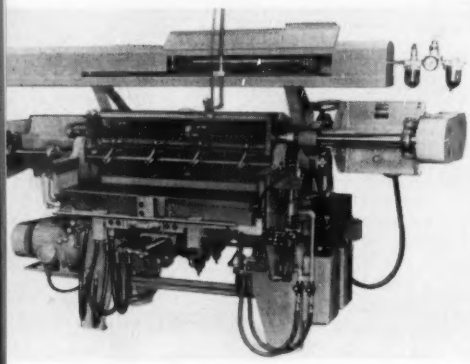
HARLOW H. CURTICE
President

THANKS TO HARLOW H. CURTICE, GENERAL MOTORS CORPORATION PRESIDENT, FOR THE ABOVE AWARD. WE HOPE WE MAY CONTINUE TO BE ONE OF YOUR SUPPLIERS OF TUMBLING MATERIAL FOR THE NEXT 50 MILLION CARS.

UNIVERSAL
TUMBLING SUPPLY CO.

14337 MANSFIELD • DETROIT 27, MICHIGAN
PHONES: VE. 8-2071 • WO 1-9198

FOR FURTHER INFORMATION USE READER SERVICE CARD



Model No. 204 Clair Surface Finishing Machine

hand crank control for magnitude and centering of side oscillation; adjustable flow control valves in all directional leads of hydraulic and air circuits; and a complete line of holding fixtures and transfer jigs for spoons and forks.

For further data circle No. 32 on Reader Service Card inside back cover.

★ ★ ★

Transparent Protective Coating

Development of a water-displacing and oxide inhibiting coating for copper or silver printed circuits, brass and copper pins, discs, switches and commutators, has been announced by the London Chemical Co., Inc.

Known as Sealbrite 10 X 1, the compound is said to remove moisture or water instantly and protect clean, bright surfaces for long periods of time without affecting the lustre or dimension of the parts. It does not have to be removed before further processing or soldering, or before end use of the product by the consumer.

For complete information or samples write to the London Chemical Co., Inc., 1535 N. 31st Ave., Melrose Park, Ill., or circle No. 33 on Reader Service Card inside back cover.

★ ★ ★

Stripper

A cold tank stripper, called "Dunkit," has been announced by The Penetone Co.

It is non-explosive, non-flammable and is safe on all metals, including aluminum. Dunkit is recommended for stripping coatings and stubborn soils from heat exchangers, paint guns and painting equipment, and other parts prior to refinishing.

For a sample and further information, write The Penetone Company, Box PF-255, Tenafly, N. J., or circle No. 34 on Reader Service Card inside cover.

★ ★ ★

Pressure Sensitive Tape

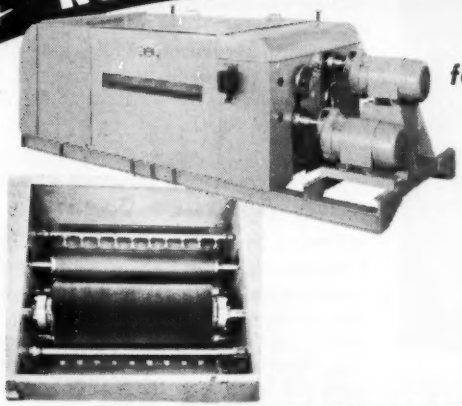
A pressure sensitive tape with vapor deposited aluminum between the tape's adhesive and backing has been announced by the Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Two tapes, No. 850 and No. 852 are available with this feature, and differ only in that No. 852 is printable and

PAINT MIXER
MIRACLE PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.
MIXERS AVAILABLE
¼ PT. to 55 GALS.
MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.
5 GAL. MODEL

ROCKWELL *Brushing Machine*



for METAL STRIP or SHEET

- Removes scale, burrs, scum or dirt.
- Polishes or produces other brushed finishes.
- May be used as individual equipment or as an integral part of a continuous heating, cleaning and drying process.
- Built to your requirements.

ROCKWELL SINCE 1888 BUILT

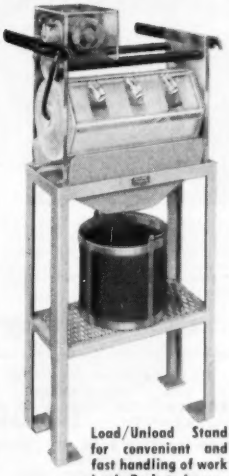
W. S. ROCKWELL COMPANY

FURNACES • OVENS • BURNERS • VALVES • SPECIAL MACHINERY

2905 ELIOT STREET • FAIRFIELD, CONN.

Sales Representatives in Principal Cities

STUTZ *Portables*



Load/Unload Stand for convenient and fast handling of work load. Baskets in perforated metals or wire mesh.

The Stutz Portable Plating Barrel is constructed of high tensile acrylic resin which provides the best material for continuous processing of piece parts through the operations of Alkali Cleaning, Water Rinsing, Acid Treatment and Plating. Progression through these operations is made by manual handling or if necessary, with the assist of an overhead traveling hoist. Cylinder suspended and rotated between heavy side frames braced with stainless steel tie-bars thereby providing rigid bearing stability. Motor drives are 1/20 and 1/50 H.P.* gearhead incorporating hardened steel and bronze gears for heavy duty performance. Forward and reverse rotation switch provided. Fused service supply. Ring and idler gears are High Tensile Acrylic, driving gear urea laminate. Gears are cut 10 pitch 20° pressure angle and are therefore virtually indestructible. Motor platform upper tie-bar assembly steel plastisol covered. Copper suspension arms with attached lifting handles plastisol covered. Cylinders can be supplied in special sizes, partitions if necessary and special cathode contactors as required.

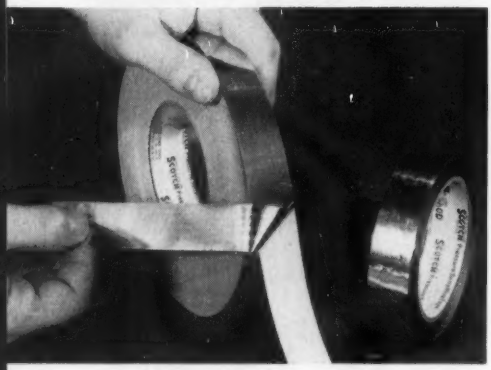
* 115 or 230 volt single phase.

Stand . . $37.50 **6" x 12" Barrel . . $176.50**

Basket . . $8.65 **8" x 18" Barrel . . $275.00**

GEORGE A. STUTZ MFG. CO.

4410 CARROLL AVENUE **CHICAGO 12, ILLINOIS**



Pressure sensitive tape has vapor deposited aluminum between the tape and backing.

is supplied with a special polyethylene coated paper liner.

Both tapes feature excellent resistance to acids and alkali and a wide range of organic solvents. Since they have a silvery appearance, they are ideal for use as readily discernible stop-off masking jobs in electroplating. They are available in ¼ to 23-inch widths on 72-yard rolls. Special sizes may be obtained on request, the manufacturer states. Sample rolls are available from Minnesota Mining & Mfg. Co., Dept. PF-25, St. Paul 6, Minn., or by circling No. 35 on Reader Service Card inside cover.

★ ★ ★

Abrasive Cone

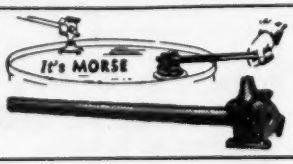
Cratex Manufacturing Co., San Francisco, Calif., has announced the development of a rubberized abrasive cone with a threaded steel bushing inserted into and bonded to the cone. The method of insertion into the cone gives the bushing a tight union fit, and provides greater flexibility in use and greater convenience in making replacements.

The Cratex Cone with a threaded steel bushing is made in two sizes: No. 1358, 1¾ inches long by 15/16 inch diameter and No. 1359, 1¼ inches long by ⅞ inch diameter. Both are designed to fit a ¼-inch diameter mandrel and both are made in four grit textures: coarse, medium, fine, and

LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE
CLEVELAND, OHIO
WRITE FOR INFORMATION AND LITERATURE

Low head room – high lift – automatic load and unload and plenty of other "automation concept" features mark the Stevens *Stevadoer*, the newest addition to the complete Stevens line of Automatic Plating and Processing Machines. *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

Send NOW for this FIT-ALL
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!

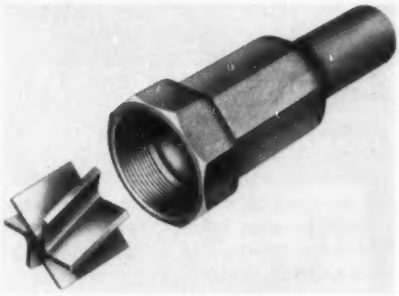


THOUSANDS IN USE saving time, labor, accidents!
SATISFACTION GUARANTEED.... $3.30
Non-sparking type $5.10
Plus Parcel Post
MORSE MFG. CO., Inc.
762 W. Manlius St., E. Syracuse, N. Y.

Cratex Rubberized Abrasive Cone has steel bushing for attaching it to the spindle (lower center).

extra fine. Rubberized Abrasive Cones are recommended for burring, smoothing and polishing. They easily shape to contour in operation or can be dressed to shape using conventional dressing tools.

For further information, address Cratex Manufacturing Company, 81 Natoma St., San Francisco 5, Calif., or circle No. 36 on Reader Service Card inside back cover.

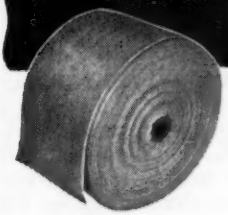


15 Degree Injector Type Fulljet Nozzle

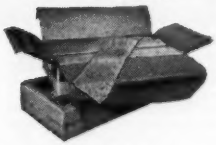
Spray Nozzle

A spray nozzle with a spray angle of 15 degrees at 40 pounds pressure has been introduced by Spraying Systems Co. Several sizes are available, ranging from 1¾ inches long with a

For Dust Free Finishes!
BOND TACK CLOTH



IN ROLLS
Cut off any size piece to use as needed.



IN BULK
Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.
"The Tacky Wiper Specialists"
2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

capacity of 1.5 g.p.m. at 10 p.s.i. to 17 inches long with a capacity of 1108 g.p.m. at 100 p.s.i. They are identified as 15 Degree Injector Type Fulljet Nozzles.

Since the unit has a relatively narrow spray angle, the spray is delivered at medium high impact. Thus it is useful in applications where a combination of heavier impact, fairly compact full cone spray, and a wide choice of capacities is desired. For complete information, write Spraying Systems Co., 3201 Randolph St., Bellwood, Ill., or circle No. 37 on Reader Service Card inside back cover.

★ ★ ★

Motor Operated Tap Switch

The Udylite Corporation has announced a motor operated Furnas Single Knob Tap Switch for use with regulated rectifiers.

Udylite Motor Generated Tap Switch mounted on a 3000 ampere selenium rectifier. Operator's control panel is shown above the rectifier.

This switch can be integrally mounted on any Udylite 1500 ampere to 6000 ampere rectifier with a remote raise and lower push button located on the

Portable Sandblast Gun

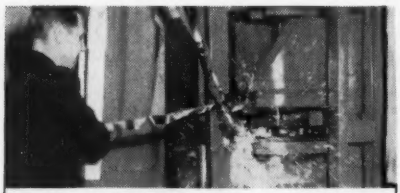
—Complete— simply connect to air line

Rugged • Efficient • Guaranteed $27.50

A Real Performer Handy in any shop

LINDBERG PRODUCTS CO.

Box 885 P Los Gatos, Calif.



The christening! The *Stevadoer*, the newest addition to the complete Stevens line of automatic plating and processing equipment, will be announced soon. Write us so that your name can be placed on our announcement mailing. *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

CHEMSTEEL CONSTRUCTION COMPANY, INC.

301 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.

Send data on Engineering & Construction facilities for

ACID-ALKALI-PROOF CONSTRUCTION

of processing & storage tanks & flooring in

☐ Steel Plant ☐ Chemical ☐ Textile ☐ Food

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

meter panel. Thus the rectifier with built in regulator can be located away from the tank and be controlled from the Udylite standard meter panel at the operator's position. Regulation is the same as with a manual switch, with 22 positions from minimum to maximum.

If desired, automatic voltage, current or current density control can also be furnished.

For further data, circle No. 38 on Reader Service Card inside back cover.

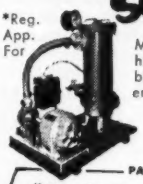
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further information
on any product mentioned
in this issue—use the
READER SERVICE CARDS
between the covers.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Filter your Solutions!

*Reg. App. For



50-2400 GAL/HR.

Model LSI-10...Cap. 100 gal/hr. H.T. Lucite Filter Assembly. Stainless pump...totally enclosed Motor...portable... Wt. 40 lbs....12"x16"x16" high.

PARTIAL LIST OF MODELS

Model	Rated Capacity	Overall Size	Weight
LSI-5	50 gal/hr	11"x14"x12"	30 lbs.
LSI-10	100 gal/hr	12"x16"x16"	40 lbs.
ASI-300	300 gal/hr	2'x2'x2'	125 lbs.
ASI-600	600 gal/hr	2'x2'x2'	150 lbs.
RLS-1200	1800 gal/hr	2'x3'x3'	300 lbs.

SERVICE . . . Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.
DESIGN . . . **Filter Assembly** fabricated of stainless steel 316, high temperature lucite, rubber-lined, Haveg or Sethrin* resin. **Filter Tubes** of cotton, dynel, porous stone or porous carbon. **Pumps** fabricated of Hastelloy, stainless 316 or plastic; centrifugal or self-priming. **Motors** drip-proof, totally enclosed, or explosion proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. **Hose** — special acid and alkali resistant. **Base** — Linen Phenolic laminate on rubber tire ball bearing casters.

Sethco MANUFACTURING COMPANY
70-72 Willoughby Street • Brooklyn 1, N. Y.

NEW HIGH-CAPACITY TURBO BLAST

PARTS CLEANER
with **SUPER AGITATION**

40 INCHES FROM FLOOR

TANK SIZE
5' x 3' x 2'

Available in sizes from 20-gallon capacity to large conveyor-type systems.

Designed for utilization of small working area with volume cleaning capacity—unobstructed sides and front for ease of operation.

EXTRA FAST — EXTRA SAFE
EXTRA ECONOMICAL

The super agitation created by the Turbo-Blast impeller is equal to vigorous hand-scrubbing action. Cleaning time is reduced as much as one-half in most applications. With a Turbo-Blast machine any parts-cleaning problem fades away, and valuable time is saved for more productive work.

Manufactured by

STORM-VULCAN, Inc.
2225 BURBANK STREET • DALLAS, TEXAS

WRITE FOR
COMPLETE CATALOG

NEWS of the Industry

NEW PLANTS

The general offices of **ATLAS POWDER COMPANY** have been moved from the downtown Delaware Trust Building, to a new building on a 45-acre tract about three miles from downtown Wilmington.

The company's new building, under construction for 14 months, will provide badly needed additional space and modern facilities for the office staff.

Adjacent to the office building is a cafeteria-recreation building for employees. The grounds include a swimming pool, tennis courts and a baseball diamond for employee use.

★ ★ ★

ACME MANUFACTURING COMPANY of Detroit, Michigan, has announced an expansion of plant facilities from 73,000 to 85,000 square feet.

The expansion was necessary because of new equipment recently developed and the demand of industry for automated metal finishing equipment, the company states.

Construction of the additional facilities is now nearing completion.

★ ★ ★

DIAMOND ALKALI COMPANY is modernizing and enlarging the facilities of the Research Center in Painesville, Ohio.

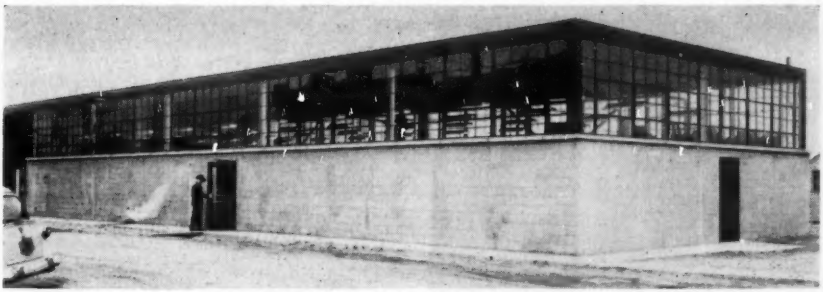
The Research Center modernization program includes the installation of a new radiation research laboratory for investigating potential applications of atomic energy for chemical applications.

Alkali and electrolytic products research will also be expanded.

★ ★ ★

The opening of a new and larger chemical laboratory to serve the Chemical Di-

Building at the right is the new addition to the plant of the Acme Manufacturing Company.



New Chemical Division Laboratory, Michigan Chrome and Chemical Co.

vision of the company has been announced by Robert J. Huber, president, **MICHIGAN CHROME AND CHEMICAL CO.**, Detroit 13, Michigan.

The new laboratory has equipment for the development of new Miccro Products and Plastiso's, maintenance of high manufacturing standards, and assistance to customers.

The staff of seven chemists, headed by Dr. Robert M. Lacy, will use the 4,000 square feet of floor space in the new laboratory for chemical development and control.

COMPANIES

THE GENERAL NUCLEAR CORPORATION, 550 Fifth Avenue, New York, N. Y., has announced the addition of germanium rectifiers to the line of selenium rectifiers manufactured by the company. General Nuclear is also p'anning to bring out a line of instruments and controls for electro-finishing.

★ ★ ★

On January 17, 1953, judgement was entered in the District Court of the United States for the Eastern District of Michigan, Southern Division, decreeing that U. S. Patent No. 2,191,813 granted on February 27, 1940, and owned by the **UDYLITE RESEARCH CORPORATION** for Electrodeposition of Nickel from an Acid Bath is good and valid in law.

It was decreed that a perpetual injunction be issued restraining the defendant from using the solutions and practicing methods constituting the patent, from inducing others to infringe the patent, and from making, using or selling the brightening agents covered by the patent.

Experienced applicators of chemical-resisting protective coatings are now being qualified throughout the country by **UNITED CHROMIUM, INCORPORATED,** 100 E. 42nd St., New York 17, N. Y. to apply the sprayable plastisol known as Unichrome Coating 5300, it has been announced by D. R. Meserve, sales manager, Organic Coating Division. This new application service is intended to make plastisols available to companies which lack facilities for applying them.

Applicators are qualified on the basis of their experience in working with different types of protective coatings as well as for their knowledge of the many industries in which protection against corrosion is required.

Unichrome Coating 5300 can be applied at room temperature to cold vertical surfaces to produce single coat, seamless, dry films up to 20 mils thick.

The new materials, Mr. Meserve said, are finding increasing use as lining and exterior coatings for tanks, ducts, and other equipment subjected to acids, alkalies, salts, oxidizing agents, moisture and other corrosives encountered in the plating, chemical and metalworking industries.

★ ★ ★

After operating for eight years as a partnership, **RAMPE MANUFACTURING CO.,** 3320 St. Clair Ave., Cleveland 14, Ohio, has incorporated. Officers of the corporation are John F. Rampe, president and treasurer; W. Charles Rampe, vice president; and Paul A. Rampe, secretary.

The company has three lines of products: custom molded injection and compression plastics; Tether-Tennis, an outdoor game; and tumbling and screening machines.

Wyandotte Chemicals will use equipment such as this Geiger Counter for a display of radioactive tracer techniques as applied to metal cleaning research, to be shown at the Ninth Western Metal Exposition.

WYANDOTTE CHEMICALS CORP., which has Booth 753 at the Ninth Western Metal Exposition, Mar. 28, Los Angeles, Calif., will feature a display of radioactive tracer techniques as applied to metal cleaning research. The complete line of Wyandotte metal cleaners for the aircraft and metal working industries will be displayed. The booth will be staffed by Robert J. Racine, manager industrial sales, Tom Todd, Los Angeles district sales manager and the fol'owing Los Angeles Wyandotte representatives: J. Y. Brame, G. W. Broomhead, R. V. Esten, R. C. Gertson, and E. A. Bedard and L. F. Coates of Wyandotte's San Francisco office.

★ ★ ★

A patent on a process for accelerating the action of acids in stripping defective chromium and nickel from base metals has been received by **DR. WALTER R. MEYER**, president of **ENTHONE, INC.** The new process makes it possible to strip the coatings without injuring the base metal. The patent, issued January 4, 1955, is titled "Accelerating Action of Acids on Metals." The products sold under the patent are designated as Enstrips "S" and "165 S." The addition of the powder to the acid used to dissolve the coatings allows the coatings to be dissolved much more rapidly than without its presence.

Grinding wheels, refractory products and barrel finishing materials will be shown at the NORTON COMPANY booth, No. 460, at the Western Metal Exposition to be held at the Pan-Pacific Auditorium in Los Angeles, March 28 to April 1.

A rotating five foot diameter replica of a Norton diamond grinding wheel will be the focal point of the exhibit, which will feature both diamond and conventional abrasive grinding wheels and mounted points for all types of tool grinding operations.

There will be a live demonstration of barrel finishing with an actual tumbling barrel in operation using Norton Alundum Tumbling Abrasive. Work samples will be processed to show before and after appearance.

Personnel who will be in attendance at the Norton booth are West Coast District Manager Robert Cushman, Harry G. Brustlin, Ercell R. Stevens, Robert N. Hamilton, Robert P. Cooper, Philip H. Threshie, Leonard I. Smith, Norman R. Ekholm, Arthur W. Cox, William F. Winemiller, and Irving W. Stanton.

★ ★ ★

NEW POSITIONS

Norman K. Meyers

The Kocour Co., Chicago, Ill., manufacturer of buffing and polishing compositions, rectifiers, analytical sets and instruments, and distributors of Roberts Rouge Company's finishing compounds, has announced the appointment of a new sales representative, **NORMAN K. MEYERS**, in the state of Michigan.

Mr. Meyers will operate from his home at 2140 Brickley, Ferndale, Michigan, in the area within 150 miles of Detroit. He has a background of nine years of diversified plating and metal finishing experience. He has served in such capacities as chemist, process engineer, production supervisor, and salesman for buffing compositions.

The **KOCOUR COMPANY** has an-

nounced new service facilities for the Kocour Electronic Thickness Tester for users of this instrument in the northeastern United States. The **ROBERTS ROUGE COMPANY** of Stratford, Connecticut, will now service all Electronic Thickness Testers in the following states: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Delaware, Rhode Island, New York, Maryland, Virginia, New Jersey and Pennsylvania (east of the Susquehanna River).

Personnel have been thoroughly trained and properly equipped. Parts and test solutions will be stocked in Stratford and available to customers in this area.

★ ★ ★

HARRY LEE SENNETT has joined Allied Research Products, Inc., Baltimore manufacturer of the Iridite line of chromate conversion coatings, as sales engineer. He formerly was a sales engineer with the metal finishing division of Allied Research.

Mr. Sennett will coordinate specification activities with various government agencies responsible for specification of chromate coatings. In addition he will serve Iridite customers in the Delaware, Maryland and Virginia areas. Mr. Sennett's headquarters will be at the company's home office, 4004 East Monument St., Baltimore 5, Md.

★ ★ ★

JOSEPH R. HUGHES has joined the sales and engineering staff of the Northwest Chemical Company. He will serve accounts in Massachusetts and Rhode Island.

Mr. Hughes has had extensive experience in the metal finishing industry. His academic background and industrial experience have been augmented by special training given by the Northwest Chemical Co. He will work from his home office, 10 Mercer Rd., Needham Heights, Massachusetts.

★ ★ ★

R. P. GANCHAN of the Automotive Rubber Company, Inc., Houston, Texas plant, has been moved up to the Detroit administration office as a vice-president and general manager of the company. He will actively direct the operation of plants in Detroit and Kalamazoo, Michigan, Houston, Texas, and Savannah, Georgia.

R. P. Ganchan (left), R. H. Glezen

R. H. GLEZEN has been made a vice-president and general sales manager for the company. In the past, Mr. Glezen has been executive assistant in the development of new plants and exploiting new markets, and has directed advertising and sales promotion.

★ ★ ★

Merit Products, Inc., manufacturer of abrasive wheels, has announced the appointment of **WILLIAM G. GILLETT** as works manager of the Culver City plant in California. Mr. Gillett will supervise production of Sand-O-Flex contour sanders and Grind-O-Flex flexible grinding wheels.

★ ★ ★

Appointment of **ROBERT BEGAN** of Bedford, Ohio, as sales representative in the Cleveland-Akron, Ohio, areas has been announced by L. F. Body, president of Body Bros., Inc., Bedford, Ohio.

Mr. Began assumed his new duties February 1, 1955. For the past 4½ years he has been plant and laboratory superintendent at Body Bros., Inc. Prior to that he spent two years as a laboratory technician with the Benton-Climo Laboratory, now known as the A. H. Climo Company of Cleveland. Prior to that he attended John Carroll University and Case, where he majored in chemistry and paint technology.

Mr. Began will provide technical service to industrial plants in his territory in addition to his duties as sales representative for Body Bros. BoGard Industrial Finishes.

Marcel Pouilly

John Sedlacsik, owner of Scientific Electric, has appointed **MARCEL POUILLY** manager of the Ionic Spray Division. Mr. Pouilly will be stationed at the Garfield, New Jersey plant, which manufactures induction and dielectric heaters and spot welders, and Micro Pressure Ionic High Potential Paint Spray Equipment.

Mr. Pouilly was recently owner of the Illinois Spray and Equipment Company, distributor of Scientific Electric spray painting equipment and supplies.

★ ★ ★

The Catalytic Combustion Corporation has announced that **HAROLD R. SUTER** has joined the staff and will maintain offices in the corporation's headquarters, 4544 Grand River, Detroit. In his new position as vice-president in charge of research and development, Mr. Suter will be responsible for new and special product applications, and will be available for customer consultation in the field of air pollution control.

Mr. Suter has been associated with Wyandotte Chemicals Corporation, Wyandotte, Michigan, for the past 13 years, where he was director of application research. Prior thereto, he was assistant professor of chemistry, Detroit Institute of Technology. He is presently a member of the American Chemical Society, American Society for Testing Materials, American Oil Chemist's Society and Association of Analytical Chemists.

★ ★ ★

L. F. Long, Jr.

Appointment of **L. F. LONG, JR.**, as industrial sales representative of the Nubian Industrial Division of the Glidden Company has been announced by T. N. Armel, national industrial sales manager of the paint and varnish division.

In his new capacity, Mr. Long will be responsible for industrial paint sales in the "middle South." His previous positions with the Glidden Company included assignments as technical service director of the Central Industrial Division and as national project development coordinator at Glidden's national headquarters in Cleveland.

Mr. Long, who graduated from Case Institute of Technology with a degree in chemical engineering, will live in Nashville, Tennessee.

Appointment of **LOWELL H. MILLER** as an industrial sales representative for the Nubian Industrial Division of The Glidden Company has been announced by Thomas N. Armel, Glidden's national industrial sales manager.

Mr. Miller has had extensive experience in production line finishing. His career in the field of industrial finishes began in 1925 when he joined the Dodge Brothers Motor Car Company as a paint chemist. Subsequently, he served as a chemist and paint engineer for the Frigidaire Division of General Motors Corporation and as chief chemist and paint engineer for the Norge Division of Borg-Warner Corporation.

Before obtaining a position with Glidden, he helped establish and served as manager of the Vedoc Paint Division of Ferro Enamel Company.

Mr. Miller, who joined Glidden last year as a Pacific Region industrial sales representative in Los Angeles, will make his headquarters at the Nubian Industrial Division offices at 1855 North Leclaire Ave., Chicago.

Globe Chemical Company, Cincinnati, Ohio, has announced the appointment of **JOHN E. HOOVER** to the Technical Division. A graduate of Xavier University, Mr. Hoover has had wide experience in the metal finishing field, and will specialize in electroplating and electropolishing at Globe Chemical Company. He was formerly associated with the Automatic Transmission Division of the Ford Motor Company in Cincinnati.

The Globe Chemical Company is a distributor in the Mid-West for the metal finishing processes of the Battelle Development Corp. of Columbus, Ohio.

★ ★ ★

Robert M. Terry

The directors of The Seymour Manufacturing Company have announced the election of **ROBERT M. TERRY** as president of the company to succeed Alton G. Wentworth, who resigned on February 1st.

Mr. Terry joined The Seymour Manufacturing Company in 1954 and was immediately elected executive vice president and a director of the company. Prior to his association with the firm, he was affiliated with The Abbott Ball Company, in Hartford, as executive vice president, general manager, secretary and a director. Before that, he was engaged in industrial engineering for several prominent petroleum producers. These included Cities Service, The Tide Water Oil Co., and The Shell Oil Co.

Mr. Wentworth has devoted practically his entire business life to his activities with The Seymour Manufacturing Company. Although retiring as president by his own request, he will continue to serve the company on a part time basis as a consultant and advisor on sales and customer relations.

★ ★ ★

The appointment of **GEORGE W. JERNSTEDT** as director of a new manufacturing laboratory of the Westinghouse Electric Corporation has been announced.

The purpose of the new laboratory Mr. Jernstedt will head is to develop improved methods, techniques, and equipment for manufacturing needs.

★ ★ ★

H. E. Martin, president of the Metal & Thermit Corporation, New York, has announced the appointment of **RICHARD O. LOENGARD** as vice president.

Mr. Loengard joined the Metal & Thermit Corporation in 1919 and subsequent to 1926 was active in the management of affiliated and subsidiary companies of the Metal & Thermit Corporation in the chromium plating and metal coating fields. He has been president of United Chromium, Incorporated, since 1945 and will continue in this capacity as well as that of vice president of Metal & Thermit Corporation.

★ ★ ★

Dr. Myles L. Mace

DR. MYLES L. MACE, professor of business administration at the Harvard Business School, has been elected to the board of directors of Interchemical Corporation to fill the place of the late Allen L. Billingsley, head of the advertising agency, Fuller & Smith & Ross.

Mr. Mace has taught Administrative Policy at the Harvard Business School since World War II and for the last four years has been associated with the Harvard Advanced Management Program for business executives. He is the author of the book, "The Growth and Development of Executives," published in 1950, and for the past several years has been doing consulting work.

He is a graduate of the University of Minnesota, received his law degree from St. Paul College and his doctorate in business administration from Harvard University.

★ ★ ★

W. E. Noyes, vice president in charge of sales for The Diversey Corporation, Chicago, has announced the appointment of **MYRON T. BENNETT** as promotional manager, Metal Industries Department.

Mr. Bennett previously was general manager of the Spec-Kem Co., a division

of Diversey, supplying special chemical compounds to government agencies.

HONORS

JACK HANNEY, a former president of the Grand Rapids Branch of the A.E.S., was recently honored by his co-workers

Jack Hanney (right) being presented 10 year service award by Robert H. Dudley, district sales manager of United Chromium.

at United Chromium. The occasion was Mr. Hanney's 10th anniversary as a sales and service engineer with the company. A luncheon, attended by all members of the Ten and Twenty Year Service Clubs of the Detroit office of United Chromium, was held at the Fox and Hounds Restaurant. Those in attendance represented more than 300 years experience in the metal finishing industry.

Mr. Hanney has long been an active participant in affairs pertaining to the A.E.S. A regular attendant of A.E.S. Conventions, he is well known in Michigan and in other parts of the country.

MEETINGS

Protective coatings, corrosion inhibitors, linings, chemical injectors, anodes, pipe wrapping machines, rectifiers, cathodic protection equipment, plastics, preventive coatings, sand blasting equipment, metal alloys, lead products, pipe wrapping material and other equipment will be exhibited at the **1955 NACE 11TH ANNUAL CONFERENCE AND EXHIBITION** to be held in the Palmer House, Chicago, March 7-11, 1955. The exhibition will be held in the Exhibition Hall and Foyer to the Grand Ballroom of the Palmer House and will include 127 booths.

Tentative reports on some of the characteristics of epoxys, chlorinated rubber, rigid vinyls, fluorocarbons, polyesters, furanes and phenolics, vinylidene chloride polymers and various heavy liners also will be given. The reports will be presented at meetings of the National Association of Corrosion Engineers' technical committee T-6A on Organic Coatings and Linings for Resistance to Chemical Corrosion.

The unit committee on protective coatings for resistance to weathering will complete a chart on "Properties of Paint Resistant to Atmospheric Corrosion."

★ ★ ★

The **13TH ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **ROCKFORD BRANCH, AMERICAN ELECTROPLATERS' SOCIETY** will be held March 19 at the Hotel Faust, Rockford, Illinois.

Clyde Kelly

CLYDE KELLY, first vice president of the American Electroplaters' Society will serve as program chairman for the Educational Session. The educational part of the program, beginning at 2:00 P.M. is as follows:

1. "The Role of Surface Active Agents in Electroplating," by Dr. Henry Brown, Udylite Corporation, Detroit, Michigan.

2. "Color Movies of Japan," by Ezra A Blount.

3. "The Use of Diaphragm Tanks in the Plating Industry," by Ezra A. Blount, Editor of PRODUCTS FINISHING magazine.

Following the Educational Session in the afternoon will be a banquet scheduled for 7:00 P.M.

Tickets for the banquet at $5.00 each are available from E. J. Budden, secretary, 122 12th Street, Rockford, Ill.

A. E. S. ANNUAL TRI-STATE REGIONAL MEETING, Hotel Deshler-Hilton, Columbus, Ohio, March 26, 1955.

Dr. Ralph A. Schaefer

The **ANNUAL TRI-STATE REGIONAL MEETING** of the **AMERICAN ELECTROPLATERS' SOCIETY** will be held March 26 at Hotel Deshler-Hilton, Columbus, Ohio, with the **COLUMBUS BRANCH** acting as host.

A tour of the Westinghouse Columbus plant has been scheduled at 10:00 A.M. by Marvin Pingel of the host branch committee.

A timely and interesting technical program has been planned by **WILLIAM J. NEILL**, Columbus Metal Products Company, program chairman. **DR. RALPH A. SCHAEFER**, A.E.S. president, will serve as chairman of the Educational Session, beginning at 1:30 P.M. The following papers will be presented:

"The Present Status of Research Project No. 15," by Walter L. Pinner, Manager, Process Development Div., Houdaille-Hershey Corporation, Detroit, Michigan;

"Specialized Nickel Plating Solution Applications," by Myron B. Diggin, Director of Research and Development, Hanson-Van Winkle-Munning Company, Matawan, New Jersey; and

"The Lea-Ronal Bright Copper Proccess," by B. D. Ostrow, Manager, Lea-Ronal, Inc., New York City.

A Dinner Dance will be held in the ballroom of the Hotel Deshler-Hilton with dinner being served at 6:30 P.M. An entertainment program will follow the dinner. Tickets for the dinner dance, at $7.50 per person, may be obtained from John G. Beach, Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio.

The Tri-State Regional Meeting is sponsored by the Cincinnati, Columbus, Dayton, Indianapolis and Louisville branches of the American Electroplaters' Society.

Chairman of the Regional Meeting Committee is **WILLIAM H. SAFRANEK**, Battelle Memorial Institute, Columbus,

William H. Safranek

Richard Jager

Walter L. Pinner

William J. Neill

Myron B. Diggin

B. D. Ostrow

Ohio; co-chairman is **RICHARD JAGER**, Northwest Chemical Company. Working with the other members of the committee to ensure the success of this regional meeting are representatives of the cooperating branches: **RICHARD K. EVANS**, Cincinnati Branch; **ROBERT L. RULEFF**, Dayton Branch; **HERBERT W. KENNEDY**, Indianapolis Branch; and **WILLIAM YOUNG**, Louisville Branch.

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The **AMERICAN HOT DIP GALVANIZERS ASSOCIATION, INC.**, will hold the **1955 ANNUAL MEETING** on Thursday and Friday, March 24 and 25, at the Brown Hotel, Louisville, Kentucky, Association secretary-treasurer Stuart J. Swensson has announced. Laurie Rautio, assistant to the president of Clayton and Lambert Manufacturing Co. will be the guest speaker at this meeting.

Highlighting the meeting will be the Problems Clinic Session, an open forum discussion on hot dip galvanizing plant operations and field performance.

Another feature of this meeting will be a tour of the plant of Clayton and Lambert Manufacturing Company, Louisville, Ky., which will also be host to the members at luncheon on Friday, March 25.

Included in the social events of this meeting will be a Cocktail Reception and the Annual Banquet on Thursday, March 24. The speaker at the banquet will be Lou Lancaster, advertising manager of Clayton and Lambert Manufacturing Co.

THE 37TH ANNUAL BANQUET AND ENTERTAINMENT OF THE MASTERS' ELECTRO-PLATING ASSOCIATION, INC., 59 E. Fourth St., New York 3, N. Y., will be held on May 7, 1955. The reception will be held at 6:30 P.M. in the Terrace Room and the banquet at 8:30 P.M. in the Grand Ball Room of the Plaza Hotel, New York City.

The Masters' Electro-Plating Association, Inc., is the largest collective group of finishing shop owners in the New York area. Officers of the group are: **AL D'AGOSTINO**, chairman of the executive committee; **SAL NOVELLI**, vice chairman; **FRANK KAISER**, treasurer; and **SILVIO C. TAORMINA**, executive secretary. Mr. Novelli is also the banquet chairman.

Tickets for the Annual Banquet (at $25.00 per person) may be obtained at Association Headquarters.

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SOCIETIES

Random views of events at the **THIRD MANAGEMENT SEMINAR** of the **NATIONAL FEDERATION OF METAL FINISHERS** and the **43rd ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **CHICAGO BRANCH, AMERICAN ELECTROPLATERS' SOCIETY** are presented here.

Total attendance for both functions, held Jan. 28 and 29, was well over 1,000.

Fig. 1—On Friday, January 28, over 100 members and guests of the National Federation of Metal Finishers assembled for a tour of the Kanigen Division, plant of the General American Transportation Corporation, East Chicago, Indiana.

For more complete information on products and processes use READER SERVICE CARDS inside covers.

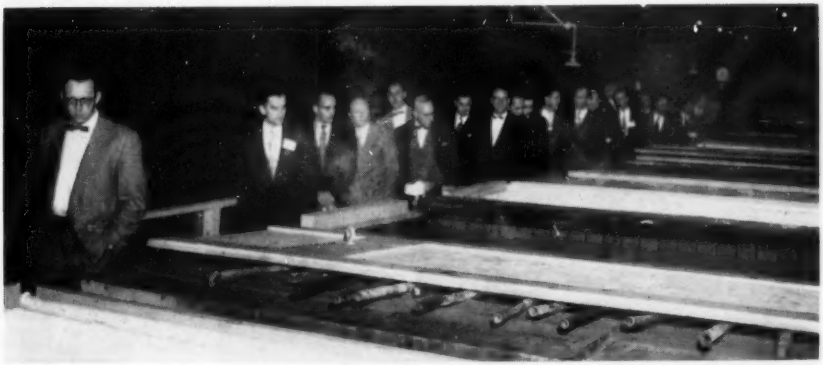


Fig. 2—A partial view of the extensive facilities installed at General American for electroless nickel plating by the Kanigen process. NFMF members and guests are shown observing the equipment installed for electroless nickel plating. The visitors were presented with brass medallions nickel plated by the Kanigen process.

Fig. 3—Edward L. Barnett, works manager, Binks Manufacturing Company, presented the first paper at the NFMF Third Management Seminar. He discussed the subject, "Can Production Controls be Applied to a Job Shop." J. Robert Greenwell, president of NFMF, opened the Seminar after which Charles N. Jensen Jensen Plating Works, introduced the speaker.

Fig. 4—The Udylite Corporation of Detroit, Michigan, acted as host at a luncheon for NFMF members and guests.

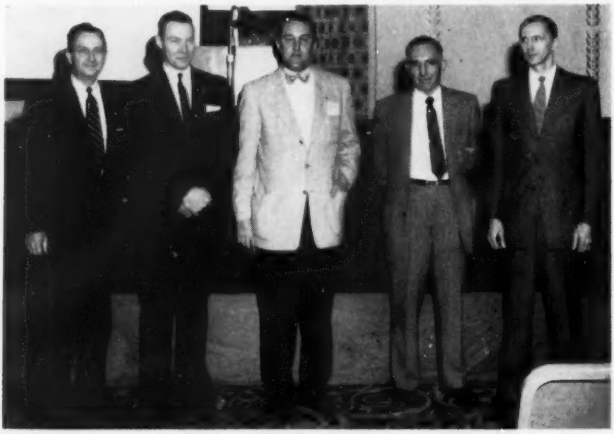
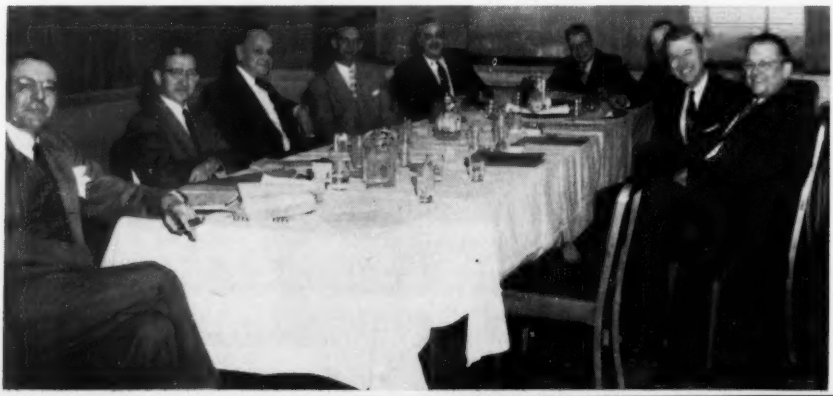


Fig. 5—The speakers for the Chicago Branch, American Electroplaters' Society Educational Session are shown with the branch president and program chairman. (Left to right) C. F. Nixon, Head, Electrochemical Division, General Motors Research Corporation, Detroit, Michigan; Ezra A. Blount, Editor of PRODUCTS FINISHING magazine; Ed Stanek, Belke Manufacturing Company, Chicago Branch President; Dr. R. E. Harr, Western Electric Company, Program Chairman; W. B. Coleman, Supervisor, Applications Research, Victor Chemical Works.

Fig. 6—Trustees of the Metal Finishing Suppliers Association conducted a thorough discussion of Association matters during the Chicago meetings. Shown (left to right) are A. P. Munning, Munning & Company, Newark, New Jersey; George A. Stutz, George A. Stutz Mfg. Company, Chicago; C. L. Berry, Maas & Waldstein, Chicago; Harold L. Kahler, Promat Division, Poor & Company, Waukegan, Illinois; William E. Belke, Belke Manufacturing Company, Chicago; Manson Glover, Glover Coating Company, Woburn, Massachusetts; Herman J. Struckhoff, Lasalco, Inc., St. Louis, Missouri; Ray F. Ledford, Industrial Filter & Pump Manufacturing Company, Chicago; H. E. Nice, The Harshaw Chemical Company, Cleveland.

(PRODUCTS FINISHING Staff Photos)



37TH ANNUAL BANQUET AND ENTERTAINMENT, MASTERS' ELECTRO-PLATING ASSOCIATION, INC., Plaza Hotel, New York City, May 7, 1955.

Robert L. Giesel

The **CHICAGO ELECTRO-PLATERS INSTITUTE** has elected **ROBERT L. GIESEL**, president, Adolph Plating, Inc., as chairman to succeed Charles N. Jensen, Jensen Plating Works. Also elected were John Lietz, B. Mercil & Sons Plating Company, who succeeds Mr. Giesel as vice chairman, and Harold W. Baker, Electro Galvanizing Company, succeeding Mr. Lietz as secretary-treasurer.

Elected to the board of directors were retiring Chairman Jensen; Erwin Elies, Berteau-Lowell Plating; William Blacklidge, Craftsman Plating & Tinning Corp.; Philip Ritzenthaler, Plating Engineering Co.; and John Samaras, C. S. Samaras & Son.

The Chicago Electro-Platers Institute is an association of 100 job-shop plating plants in the Chicago area.

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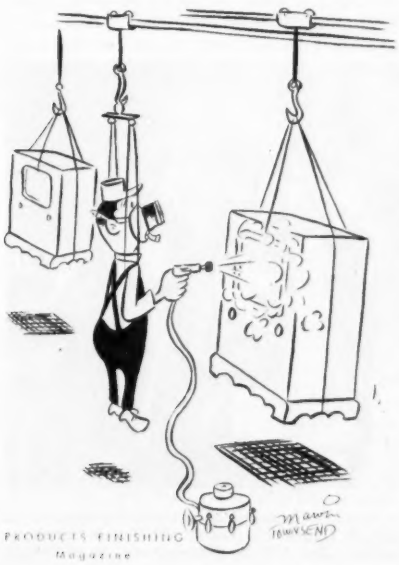

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Dr. C. Fred Gurnham

Shortly after the Michigan Water Resources Conference, the **NATIONAL TECHNICAL TASK COMMITTEE ON INDUSTRIAL WASTES** convened at Michigan State College for a two-day meeting. This committee is made up of technologists drawn from every industry creating liquid wastes as by-products of maufacturing operations. Formed by authorization of the Surgeon General of the Public Health Service, this group meets annually to discuss progress in water pollution abatement.

The committee elected **K. S. WATSON** chairman for 1955. Mr. Watson is a consultant on water management and waste control to the General Electric Company at Schenectady, New York. **DR. C. FRED GURNHAM** of Michigan State College was elected vice-chairman. **L. F. WARRICK** of the Public Health Service was re-elected secretary. Mr. Warrick has served as secretary to the committee since its organization in May, 1950.

The section of Task Group III, Chemical Processing, devoted to study of electroplating wastes, which is headed by Dr. C. Fred Gurnham, reported as follows:

During the past year no spectacular discoveries in the field of electroplating waste disposal were reported, but there have been gradual advances on many fronts. Several new treatment plants were described in the literature of 1954. These included the General Electric plant at Erie, the General Motors Buick plant

at Willow Springs, Illinois and Ternstedt Division works at Flint, Michigan, the Oneida Silverware plant at Sherrill, New York, and the U. S. Steel Fairless works near Morrissville, Pennsylvania. The State of Michigan recently reported 9 waste treatment installations for the control of electroplating wastes during 1954.

The American Electroplaters' Society research program has been resumed during 1954, after a year of inactivity caused by lack of a research fellow. The Society is placing increased emphasis on techniques for small platers rather than on theoretical studies which are of value only to designers of large plants. In this connection Dodge and Zabban have prepared a paper "How the Small Electroplater Can Treat Cyanide Plating Waste Solutions With Hypochlorites," which will be published within a few months. The research phase of the A.E.S. program will continue to use a theoretical approach such as is consistent with graduate work in a university. The program for the next year is concerned with rate studies in the oxidation of cyanide.

The effects of cyanide on sewage treatment are being studied at Michigan State College.

Ohio State University has been studying the effects of chromate waste on trickling filters and has found that 4 p.p.m. of chromium affects BOD removal. This investigation is being extended to include the activated sludge process. The studies are sponsored at least in part by ORSANCO.

The Metal-Finishing Industry Committee of ORSANCO has completed publication of four manuals, describing measurement of flows, analysis of wastes, reduction of waste loads by good housekeeping, and evaluation of waste treatment methods. The commission has continued to sponsor work on toxicity through research at the Kettering Laboratory.

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A number of committees of the **AMERICAN SOCIETY FOR TESTING MATERIALS** met in Cincinnati during the week of January 31 to February 4. **COMMITTEE B-8 ON ELECTRODEPOSITED METALLIC COATINGS,** as well as a number of subcommittees held meetings of particular interest to the electroplating industry. These groups included Subcommittee 1 on Specifications, Papers and Definitions, under the chairmanship of Fielding Ogburn of the National Bureau of Standards; Subcommittee 2 on Performance Tests, chairman, Walter L. Pinner, Houdaille-Hershey Corporation; Subcommittee 3, Conformance Tests, chairman, Ray E. Ledford, Industrial Filter & Pump Mfg. Co.; Subcommittee 4 on Electroplating Practice, chairman, Max Frager; and Subcommittee 5, Supplementary Treatments for Metallic Coatings, chairman, M. Darrin.

Fig. 1—A.S.T.M. Committee B-8 on Electrodeposited Metallic Coatings held a number of sessions during 1955 Committee Week in Cincinnati. Clarence H. Sample, International Nickel Company, is chairman of the committee and Dr. R. B. Saltonstall, The Udylite Corporation, is secretary.

NECROLOGY

SAMUEL FORMAN WALTON died on January 20, 1955, in Buffalo, N. Y., after an illness of about 1 month. Mr. Walton was vice president and technical director of the Exolon Company, Tonawanda, N. Y. He had been associated with Exolon since 1927, and had been a vice president of the company since 1950.

A graduate of Iowa State College, Mr. Walton was a Fellow of the American Ceramic Society, and in 1942 received a professional engineering degree from the New York State College of Ceramics. He was a member of the Institute of Ceramic Engineers, the New York State Ceramic Association, the Abrasive Grain Association, the American Chemical Society, and the Electrochemical Society.

meetings
OF INTEREST TO FINISHERS

Mar. 7. Annual Meeting, Capitol District, A.E.S., Menands, New York.

Mar. 7-11. Eleventh Annual Conference and Exhibition of the National Association of Corrosion Engineers, Palmer House, Chicago, Ill.

Mar. 10. Annual Meeting, Waterbury Branch, American Electroplaters' Society, Hotel Elton, Waterbury, Conn.

Mar. 12. Annual Meeting, Baltimore-Washington Branch, American Electroplaters' Society, Washington, D. C.

Mar. 19. 25th Annual Technical Session and Dinner Dance, Los Angeles Branch, A.E.S., Hotel Ambassador, Los Angeles, Calif.

Mar. 19. Annual Meeting, Rockford Branch, American Electroplaters' Society, Hotel Faust, Rockford, Ill.

Mar. 24-25. Annual Meeting, American Hot Dip Galvanizers Association, Inc., Brown Hotel, Louisville, Ky.

Mar. 26. Annual Tri-State Regional Meeting, American Electroplaters' Society, Hotel Deshler-Hilton, Columbus, Ohio.

Mar. 28-Apr. 1. Ninth Western Metal Congress, American Society for Metals, Ambassador Hotel, Los Angeles, Calif.

Mar. 29-Apr. 7. 127th Meeting, American Chemical Society, Cincinnati, Ohio.

Apr. 4. Annual Meeting, Twin City Branch, American Electroplaters' Society, The Covered Wagon, Minneapolis, Minnesota.

Apr. 5-6. Spring Conference, The International Association of Electrotypers and Stereotypers, The Kentucky Hotel, Louisville, Ky.

Apr. 8. Annual Meeting, Bridgeport Branch, American Electroplaters' Society, Hotel Barnum, Bridgeport, Conn.

Apr. 16. Empire State Regional Meeting, American Electroplaters' Society, Hotel Seneca, Rochester, N. Y.

Apr. 23. Annual Dinner Dance and Educational Session, Indianapolis Branch, American Electroplaters' Society, Indianapolis Athletic Club, Indianapolis, Ind.

Apr. 30. Annual Meeting, Milwaukee Branch, American Electroplaters' Society, Schroeder Hotel, Milwaukee, Wis.

Apr. 30. Annual Meeting, Boston Branch, American Electroplaters' Society, Hotel Statler, Boston, Mass.

May 1-5. 107th Meeting, The Electrochemical Society, Hotel Sheraton-Gibson, Cincinnati, Ohio.

May 7. 37th Annual Banquet and Entertainment, Masters' Electro-Plating Association, Inc., Plaza Hotel, New York City.

May 7. Annual Meeting, Toronto Branch, American Electroplaters' Society, Sheraton-Brock Hotel, Niagara Falls, Ontario.

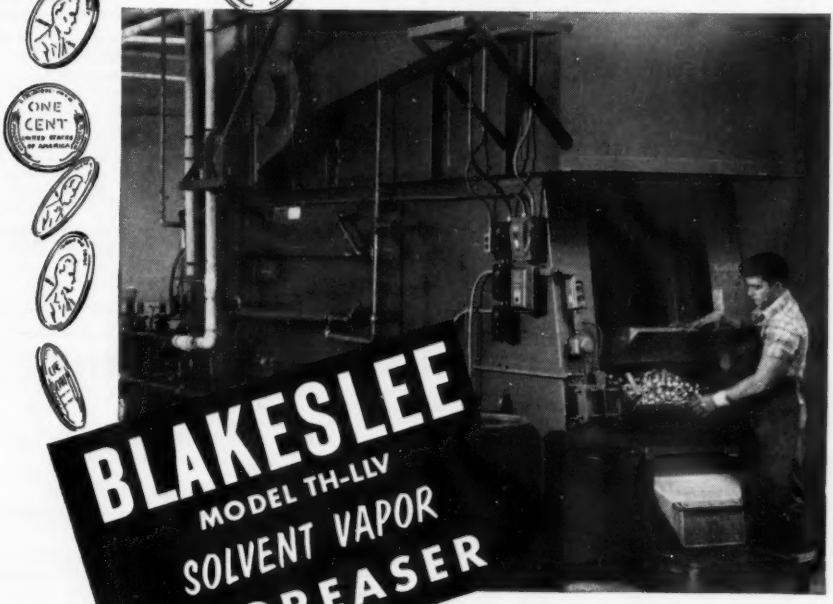
May 14. 16th Annual New England Regional Meeting, American Electroplaters' Society, Hotel Statler, Hartford, Conn.

June 20-23. 42nd Annual Convention and 4th Industrial Finishing Exposition, American Electroplaters' Society, Municipal Auditorium, Cleveland, Ohio.

The Finishing Touch **By J. A. Patterson**

"Wuz you speakin' to me, Ernie?"

PENNY-PINCHING GIANT



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MIRACLES IN PAINTING. A sound and color film entitled "Miracles in Painting" may be obtained for showing to interested groups in the finishing industry from the **Ransburg Electro-Coating Corporation,** Indianapolis 7, Ind. The film shows a variety of products being automatically sprayed, using the Ransburg Electrostatic Processes of paint application.

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ALUMINUM INDUSTRIAL BUILDING PRODUCTS. Architectural products fabricated from aluminum are discussed in a booklet available from the **Aluminum Company of America,** 1501 Alcoa Bldg., Pittsburgh 19, Pa. The publication describes many of the standard aluminum fabrications made by the company, and emphasizes the advantages to be gained through their use. These include good corrosion resistance and light weight. Details are also given for ribbed industrial siding, which is used extensively for industrial construction.

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WATER TREATMENT METHODS. Cochrane Corporation, Philadelphia 32, Pa., designers and manufacturers of water conditioning equipment, offers a 40-page book entitled, "Handbook on Demineralizing." This handbook, **PUBLICATION 5800-B,** compares various methods of water treatment, and gives characteristics of the various types of cation and anion exchange materials.

It tells when to use 2-bed, 3-bed, 4-bed, mixed on mono-bed demineralizers. It also indicates when decarbonators or vacuum deaerators are required. The bulletin has many typical flow diagrams and photos of installations.

Index to Advertisements

Acme Mfg. Co. 109
Aget Mfg. Co. 86
Alcaloy, Inc. 133
Allied Research Products, Inc. 75
Almco Div., Queen Stove Wks., Inc. 11
Alsop Engr. Corp. 4
American Brass Co. 103
American Chemical Paint Co. 67
Anderson's Plastics Co. 106
Automotive Rubber Co. 113

Bates Soap Corp. 114
Bede Products Corp. 127
Better Finishes & Coatings, Inc. 37
Binks Mfg. Co. 90, 91
Blakeslee & Co., G. S. 157
Bond Chemical Products Co. 139
Buckingham Products Co. 103

Ceilcote Co. 108
Central Machine Wks. 14
Chandeysson Electric Co. 62, 63
Chemsteel Construction Co., Inc. 140
Chicago Rubber Co. 97
Cincinnati Cleaning & Finishing Mchry. Co. ..... Second Cover
Circo Equipment Co. 107
Clair Mfg. Co., Inc. 98
Clinton Co. 71
Cowles Chemical Co. 24
Cro-Plate Co., Inc. 54

Despatch Oven Co. 55
Detrex Corp. ..... Fourth Cover
Detro Mfg. & Sales Co., Inc. 74
DeVilbiss Co. 64, 65
Dixon & Rippel, Inc. 124
Du-Lite Chemical Corp. 102

Enthone, Inc. 23

Formax Mfg. Co. 8
Fuller Brush Co. 69

G. S. Equipment Co. 119
Gasway Corp. 115
General Nuclear Corp. 70
Glo-Quartz Electric Heater Co. 50
Grav-I-Flo Corp. 18

Hammond Mchry. Builders, Inc. 7
Hanson-Van Winkle-Munning Co. ..... 3, 80-A, -B, -C, -D
Harshaw Chemical Co. 10
Hisey-Wolf Machine Co. 47
Holland & Sons, Inc., J. 70
Hygrade Food Products Corp. 80

Industrial Filter & Pump Mfg. Co. 77
Industrial Filtration Co. 17
Industrial Finishing Exposition 68
Industrial Systems Co. 72
International Rustproof Corp. 76

Jelco Finishing Equipment Corp. 112

Keystone Emery Mills 106
Kimberly-Clark Corp. 45
Koch Sons, Inc., Geo. 125
Kocour Co. 110

Lanly Co. 138
Lindberg Products Co. 140
Lowe Bros. Co. 92, 93

MacDermid, Inc. ..... Third Cover
Masters E'ectro-Plating Association 134
Manufacturers Processing Co. 52
Meaker Co. 16
Mechanical Process Co., Inc. 84
Metalwash Mchry. Corp. 39
Midland Industrial Finishes Co. 96
Miller Div., J. C. 101
Minnesota Mining & Mfg. Co. 43, 81
Miracle Paint Rejuvenator Co., Inc. 136
Morse Mfg. Co., Inc. 138

Naz-Dar Co. 122
Neilson Chemical Co. 15
Newcomb-Detroit Co., Inc. 118
Norton Co. 2

Oakite Products, Inc. 1

Park Chemical Co. 79
Parker Rust Proof Co. 123
Pennsylvania Salt Mfg. Co. 73
Perma-Line Rubber Products Corp. 38
Peters-Dalton, Inc. 99
Phillips Mfg. Co. 44
Pioneer Rubber Co. 100
Pittsburgh Plate Glass Co., Brush Div. 85
Pittsburgh Plate Glass Co. 12, 13
Platers Research Corp. 40
Potter Paint Co., Inc. 46
Powers Regulator Co. 9
Promat Div., Poor & Co. 129

Randolph Products Co. 126
Ransburg Electro-Coating Corp. 87
Ransohoff, Inc. 6
Rockford Varnish Co. 22
Rockwell Co., W. S. 137

Sethco Mfg. Co. 141
Seymour Mfg. Co. 121
Sherwin-Williams Co. 117
Sly Mfg. Co., W. W. 111
Solvents & Chemicals Group 49
Spee-Flo Sales Corp. 41
Stanley Chemical Co. 131
Stevens, Inc., Frederic B. 51, 138, 140
Storm-Vulcan, Inc. 141
Stutz Mfg. Co., Geo. A. 137
Sulphur Products Co. 124

Technic, Inc. 104
Thor Chemical & Equipment Corp. 116
Tru-Brite Chemical Products Co. 132

Udylite Corp. 56, 57
United Chromium, Inc. 20, 21
Universal Tumbling Supply Co. 135

Wallace & Tiernan, Inc. 53
Wyandotte Chemicals Corp. 19

PRODUCT LITERATURE

48. Contact Wheels.

A folder being distributed by the Chicago Rubber Co., Inc., 2620 N. Clybourn Ave., Chicago, Ill., gives details on the company's R54 Universal Cosmowheel. The tires for this wheel are available plain or serrated, and in a variety of hardnesses, widths, and serrrations. The hubs are universal and will take a variety of widths and hardnesses. Also included in the folder are recommendations for the correct wheels for various types of operations.

49. Chemical Resistance Chart.

Specific resistances of the various Pennsalt chemical resistant cements are shown in a folder available from Pennsylvania Salt Manufacturing Co., 964 Widener Bldg., Philadelphia 7, Pa. Resistance of silicate, resin, and sulfur cements to various chemicals and solvents is shown.

50. Barrel Degreaser.

A pamphlet being distributed by the Armstrong & White Co., Cheswick, Pa., shows pertinent details on operation of the Aircon Vapor Degreaser. Complete specifications and descriptions are given for the standard vapor degreaser and for the heavy duty model, which includes spray equipment in addition to the basic unit.

51. Portable Lucite Plating Barrel.

Several well illustrated data sheets listing and describing the component parts of the portable lucite plating barrel are available from George A. Stutz Mfg. Co., 1647 Carroll Ave., Chicago 12, Ill. The load/unload stand for the Stutz Portable Plating Barrel is illustrated.

52. Black Oxide Finish.

Bulletin H-16, available from the Park Chemical Co., 8074 Military Ave., Detroit 4, Mich., explains the use of Park No. 290 Blackening Salt in producing a black oxide finish. Applications and process details are shown.

53. Paintbond Booklet.

Information on the Detrex Paintbond phosphate coating process is contained in a bulletin which may be obtained from the Detrex Corporation, Dept. PB-308, Box 501, Detroit 32, Mich. Facts about the processing, equipment, the coating formed, and the materials used are given.

54. Silicone Coating.

Examples of the application of Sicon heat resistant finishes are cited to show the advantages of this coating in a brochure available from Midland Industrial Finishes Co., East Water St., Waukegan, Illinois.

55. Complete Finishing Systems.

Folder M-5, available from George Koch Sons, Inc., Evansville, Ind., lists the advantages of Koch complete finishing systems, making possible perfect "dove-tailing" of components and maximum efficiency of installation.

56. Diaphragm Systems.

A booklet available from the Automotive Rubber Co., 12564 Beech Rd., Detroit 39, Mich., gives details on ARco Diaphragm Systems. These diaphragms are used to separate anolyte from catholyte through canvas barriers between the anode and the cathode. They may be used either horizontally or vertically.

57. Metal Finishing Products.

A graphic presentation of Wyandotte products for the metal finishing industry is given in a catalog which may be obtained from Wyandotte Chemicals Corp., Wyandotte, Mich. Information on barrel finishing materials, electrocleaning compounds, rotary type washing machine cleaners, tumble cleaning materials, and other products of interest to the finishing industry is included.

58. Chromate Coatings.

Chromate protective coatings for zinc surfaces are detailed in a brochure entitled "Promat Metal Finishing Processes," available from Promat Division of Poor & Co., 851 S. Market, Waukegan, Ill. Information given includes characteristics of the film formed, operating conditions, control recommendations, and formulas for preparing the solutions.

59. Water Wash Spray Booth.

Advantages are detailed for Binks Dynaprecipitor Spray Booths in a folder which may be obtained from the Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill. Diagrams are used to show the method of sludge removal and maintenance features. Facts about air supply systems manufactured by the company are also given.

USE CARD FOR FREE LITERATURE

60. Metal Strippers.

Enthone, Inc., 442 Elm St., New Haven, Conn., has announced the availability of an illustrated folder describing Enstrips, which are materials for selectively stripping one metal from another. A chart is given to make possible easy selection of the proper stripper for a particular job.

61. Spray Pickling.

Metalwash Machinery Corporation, 915 North Ave., Elizabeth 4, N. J., offers a booklet entitled "What You Should Know About Continuous Spray Pickling." With an introduction on the process of spray pickling, the booklet discusses the pickling of drawn parts, and the preparation of steel for porcelain enameling.

62. Degreasing Solvent.

Information on Chlorothene (Dow Inhibited 1,1,1-Trichloroethane), a cold degreasing solvent, has been compiled in a pamphlet which is available from the Dow Chemical Company, Solvent Sales Department, Box 592, Midland, Michigan. Chlorothene's low toxicity, high solvent power and stability recommend it for cold cleaning, dip cleaning and bucket cleaning operations.

63. Re-Usable Shipping Containers.

Peters-Dalton, Inc., 17908 Ryan Road, Detroit 12, Mich., offers Technical Bulletin No. 601 under the title, "Re-Usable Containers and Special Products." This booklet describes advantages to be gained by packaging, storing and shipping industrial materials in Re-Usable Metal Containers.

64. Phosphatizing Process.

The Phosteem method of cleaning and phosphatizing using spray guns is discussed in Brochure 54-122, which may be obtained from the Neilson Chemical Co., 6561 Benson St., Detroit 7, Mich. This method is designed for treating large and bulky equipment.

65. Buffing Compounds.

Information on buffing compounds is given in a catalog obtainable from the Formax Mfg. Co., Detroit 7, Mich. Details are included on bar, tube, and liquid forms.

66. Power Driven Brushes.

Information on power driven brushes for metal cleaning and preparation is given in Catalog 54-W, which is available from the Pittsburgh Plate Glass Co., Brush Division, 3221 Frederick Ave., Baltimore 29, Md. Outstanding qualities and applications for industrial brushes are included in this catalog, which includes the entire line of brushes.

67. Vapor Degreasers.

A bulletin being distributed by the Phillips Manufacturing Co., 3457 Touhy Ave., Chicago 45, Ill., describes and illustrates Phillips metal cleaning equipment. Typical applications and advantages in the use of this equipment are covered.

68. Buffers.

Catalog 72PR, available from the Hisey-Wolf Machine Co., Division of The Cincinnati Electrical Tool Co., Cincinnati 8, Ohio, gives information on buffers of many types and sizes. These buffers are available from ¼ to 30 h.p. capacity in direct or V-belt drives.

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46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75

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69. Miniature Plating Barrel.

A bulletin from the Daniels Plating Barrel & Supply Co. describes the company's model 3H miniature plating barrel. Specifications, recommended uses, and outstanding features are given for this transparent plastic unit. Write to Daniels Plating Barrel & Supply Co., 129 Oliver St., Newark 5, N. J.

70. Pickling Aids.

Two pickling aids, plus an improved version of an established heavy-duty inhibitor, are described in the bulletin "Houghton Pickling Inhibitors," issued by E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa. The three products are: Acitrol 3129, an improved non-foaming heavy-duty inhibitor now effective over a wider range of conditions than before; Acitrol 3130, a foam producing pickling inhibitor which produces clean, smut-free surfaces and is especially useful where bright work is desired; and Acitrol Foam 25, a cationic foam-producing chemical which can be used in any desired concentration to provide foaming action.

71. Ovens and Driers.

A catalog which may be obtained from the W. S. Rockwell Co., 2905 Eliot St., Fairfield, Conn., gives information on the ovens, dryers, and other heating equipment manufactured by Rockwell. This catalog covers the company's complete line, including continuous conveyor ovens, recirculating ovens, rack loading ovens, cabinet ovens, and other heating equipment. Complete data is given for each model.

72. Complete Finishing Equipment.

The Hygrade Metal Finishing Division of the U. S. Hoffman Machinery Corp., 105 Fourth Ave., New York 3, N. Y., is distributing Bulletin HH-100, showing the company's line of metal finishing equipment. This includes cleaning and pickling machines, phosphatizing equipment, spray booths, electrostatic paint spraying equipment, filters, stills, and blowers.

73. Buffing Compound Applicators.

Information on equipment for the automatic application of buffing compounds is given in Bulletin No. 600, which may be obtained from the George L. Nankervis Co., 19255 W. Davison Ave., Detroit 23, Mich. Details on operation, construction, maintenance, and installation are given in the folder. Typical installations of several different models are pictured.

74. Immersion Heater Control Equipment.

Bulletin CE-75, available from the Glo-Quartz Electric Heater Co., Inc., 37934 Elm St., Willoughby, Ohio, gives information on equipment manufactured by the company for controlling electric immersion heating equipment. Included in the discussion are descriptive material on thermostats, time switches, magnetic contactors, wiring diagrams, and methods of solving heating problems.

75. Belt Grinder.

Model 500 Contact Wheel Belt Grinder is described in a folder being distributed by B & E Manufacturing Company, Inc., 407 Liberty St., Kansas City, Mo. Advantageous features, specifications, and applications are included. Photographs of this equipment in operation, and a description of accessories are included.

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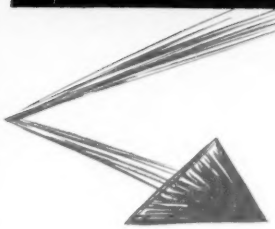

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